BULLETIN 1

Alberta Schools

FOUNDATIONS OF EDUCATION

Authorized by the Department of Education
PROVINCE OF ALBERTA

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BULLETIN 1

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AN INTRODUCTION TO THE

PROGRAM OF STUDIES

FOR THE

ELEMENTARY AND SECONDARY SCHOOLS

FOUNDATIONS OF EDUCATION

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FOREWORD

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In presenting Bulletin 1, a statement regarding purposes, functions and procedures, we do so with full recognition that one cannot speak or write with respect to education and the educative process with any high degree of finality. Opinions are many. Exact knowledge in the pedagogical field is still limited despite extensive and fruitful research. Times, conditions and extending knowledge necessitate continual reconsideration of the premises by which we are guided.

Recognizing these limitations, the Department of Education, nevertheless, submits with considerable confidence this statement of educational principles, combining the thoughts, views and findings of our own curriculum groups with those of many widely recognized authorities, interpreted in the light of the needs and conditions prevailing in Alberta.

We recommend its careful study to professional educators, since a critical re-examination of the principles of his craft brings to any educationist greater insight into his work. We recommend it for study by groups. We see within it many topics for examination and discussion by A.T.A. locals and Home and School Associations. And finally we recommend it to the interested layman who wishes to be informed respecting the principles guiding the forward development of our schools.

W. H. SWIFT.

Department of Education,
Edmonton, Alberta,
August, 1949.

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All sound educational programs have their beginnings in some code or system of consistent, justifiable objectives and purposes. The nature and variety of the curriculum, the emphasis of instruction, the years of school attendance, the type of school building, and the qualifications of the teacher are all, in large measure, determined by the goal toward which the school expects or is expected to strive. It would seem perfectly logical then, that the conscientious classroom teacher might well ask: What are the objectives of Alberta education and whose duty and responsibility is it to formulate them?

In a culture such as ours the indisputable assignment of rights and responsibilities is a difficult thing. We pride ourselves upon our degree of democracy—and in a democracy all voices are to be heard. We are still very close indeed to a pioneer community—and in such a community personalities often weigh more heavily than offices. Consequently it is difficult to determine clearly whence come the directives that set the pattern of our education. One thing can be said with certainty, the pattern of our school, whatever it is, grows out of the interaction and interplay of many contributing groups. The professional educator group, of course, has something to say about it. Composed of administrators, superintendents, text book authors, curriculum writers, professors, and other officials high and low throughout our Department and our university they have through their utterances in speech or print a direct discernible influence. They are perhaps the most articulate group concerned. The second group is composed of the thousands of teachers who, day by day, direct student activities within the classrooms of the province. Face to face with the actual problems of pupil achievement, child nature, class load, school plant and instructional time, they know well enough the realities and difficulties of the educational process. They are perhaps the most practical group of all concerned. The third group is that vast miscellany generally classified simply as society, or, if you like, the public. Parents are there speaking singly or collectively through organizations such as the Home and School Association. Elected representatives on school boards, municipal councils and legislative assemblies are there, an influence direct or indirect, constant or spasmodic. Business firms, governmental agencies, chambers of commerce, and service clubs are there showing some interest and attention, often critical, sometimes laudatory, toward school affairs. The press, the radio and the pulpit are there, influencing the school through the messages they deliver. Finally the ordinary citizen is there. Without an organized medium of expression he is, nevertheless, able to contribute toward a climate of opinion which must not be disregarded. The public is the most permanent group of all those interested in our schools.

The fourth group is the student body, the 160,000 boys and girls who daily occupy the desk rows of the classrooms of Alberta. Their interests, aptitudes and abilities are issues of consequence. Their responses and their reactions determine in the main the failure or success of the entire educational experience. With no recourse other than indifference or final withdrawal they are subjected daily to those offerings devised and administered by their masters. They are taught and tested and labelled and graded. They bear the eventual brunt of every educational mistake regardless of its origin. In 1947, Alberta schools had more than 17,000 beginners but less

than 2,600 graduates. This toll that education takes of their numbers is too ofen overlooked. The student body is the most affected (and the least consulted) group interested in the goals of Alberta education.

These then are the people who in Alberta today have a right to participate in determining the objectives of our school. Certainly not all of these groups will make first hand contributions toward the formulating of a statement of purposes or directives. The public and the student body, for example, have no means of voicing a corporate opinion, presuming that such an opinion were possible. That fact should not in the least deprive them of their right to support or reject, to concur or disagree with goals proposed by more articulate participants.

In whatever efforts the school makes to meet the requirements of these various groups, two basic considerations must constantly be in mind. First education must recognize and accept the inherent nature of man, and second education must satisfy the fundamental demands of the social order of the day. Attempting to meet these requirements is not at all an easy matter. The destiny and purpose of humanity has intrigued philosophers in all ages, and the answer is still far from complete. Modern society embraces many divergent elements which interrelate in countless ways and which result in such far reaching movements that orientation and recognition are not readily achieved by even the keenest observer. The accomplishment of Alberta schools depends in no small measure upon the insight and sensitivity of our teachers to the evolving pattern within the modern social flux.

It is not enough to understand something of the nature of man and something of social structure and change. There must be some clarification of the relationship that exists between these two factors. It is natural that in large measures the requirements of society are in harmony with the desires of the individual. In many instances, however, a divergence or conflict between the individual and his group becomes evident. For example, the profit motive of the individual is not always in accord with the best interests of the community, and the self-assertion of adolescence may conflict with the regime of the classroom or the etiquette of the drawing room. It is impossible to generalize as to which of these basic interests, the individual or the group, should be dominant. The wishes of the individual may be largely disregarded when the state decrees war or national emergency. The state church has all but disappeared in deference to the individual's right to freedom of worship. Educational difficulties may easily arise when either of these two areas of living, the personal or the communal, is forced into a position permanently subordinate to the other. Those who seek progress solely through the renovation and improvement of social institutions are assailed as pagan and unfeeling. Those who pin their faith primarily upon transformation of human nature through self-discipline and self-realization are labelled visionary and impractical. It would appear that true progress requires a synthesis of these points of view. Any educational plan that disregards or minimizes the co-functional intimate relationship of personality and community will be distorted and will fail in the very objective for which it strives hardest. An autocratic, stratified, rigid social order will depress and inhibit the aspirational level of its people, as the medieval fuedal system is well illustrated. Similarly, a stimulating social structure is an impossibility if a majority of its citizens remain bigoted, narrow-minded and morally impoverished. The school that would effectively inculcate sterling personal worth in its students must spend a portion of its energy in building social patterns within its community that will allow ideals to become realities, at least in part. Democracy may raise itself by its educational bootstraps, but not so long as it tugs only at one leg.

In the area of personal growth, the school has long neglected the field of moral and emotional maturity in favor of the more tangible area of intellectual achievement. Likewise in the social field, our schools have emphasized the advance of technological science rather than the pressing problems involving human relationships. Two reasons suggest themselves at once. First, emotional growth and institutional change are both difficult to teach and difficult to measure. Factual knowledge and scientific improvement are relatively easy to teach and their measurement can be more immediate and exact. Second, people generally seem more concerned over science and economics than over sociology and ethics. The energies of our western culture have been directed to utilitarian expansion and economic production more than to an improvement of the social environment or to the evaluation and realization of spiritual values.

Our schools have followed in this technological culture pattern without noticeable protestation. Some people may argue that the role of the school is to realize rather than to initiate, that schoolmen must essentially be the masons rather than the architects of the future. This view tends to curtail and devalue the actual contribution education can make. Certainly educators should not aim to be the steering committee for society. But neither should they be content merely to implement the directives originating from another, and perhaps no more competent, section of society. The effectiveness of our school depends upon the role it accepts **within** Canadian society and upon the pressures it can exert **within** that society for desirable growth and correction. It can, through proper channels, influence contemporary thought and action. More important is the influence it can exert upon future thought and action by the attitudes it can foster among the developing personalities of the students. The fact remains that our schools have been content to emphasize the innovations of an improved technology. Vocational agriculture has been the latest important addition to the Alberta high school curriculum. Physics 1 enrolls as many high school pupils as do Sociology, Psychology and Art combined. The most spectacular expansion of educational expenditure in Alberta over the past ten years has been in motor-bus transportation. The reading of classics is on the decline, but the use of school broadcasts and films is multiplying. Controversial issues in social studies are handled hesitatingly. Somehow our school must offer leadership in establishing a balanced point of view respecting the problem of living. Lewis Mumford is concerned with the same problem as it appears in general society when he writes:

> "The materialist creed by which a large part of humantiy has sought to live during the last few centuries confused the needs of survival with the needs of fulfillment; whereas man's life requires both. For survival, the physiological needs are uppermost; and the most imperative, obviously, are the needs for air and water: then food and shelter against extremes of temperature, and so by degrees one passes to those social needs for communication and co-operation that never wholly limit themselves to life-preservation in the narrow sense. . . .
>
> "In terms of life-fulfillment, however, this ascending scale of needs, from bare physical life to social stimulus and personal growth, must be reversed. The most important needs from the standpoint of life-fulfillment are those that foster spiritual activity and promise spiritual growth: the needs for order, continuity, meaning, value, purpose and design—needs out of which language and poesy and music and science and art and religion have grown. The deepest, the most organic, of these higher needs is that for love: all the stronger because it is rooted in survival. Neither group of needs is in a watertight compartment: lovers must

eat and even greedy eaters have been known to share their food with the starving. Nevertheless there are conflict and tension between these two sets of needs, as there are between the primitive institutions of the tribe, seeking self-preservation, and the order of an open society, prepared to share its highest values with all other men. . . .

"But no matter how primitive the community, and no matter how terrible the pressure of war, pestilence, or natural disaster, there must always be a sufficient margin of time and energy to carry forward the processes that make life-fulfillment possible. No matter how harassed a mother may be, she must give her child the gift of language as well as food. When life-fulfillment is put first, an intensification of activity takes place in all the subordinate needs, for they then have a meaning and a purpose that they do not possess in themselves: they do not merely sustain life but raise it to a higher level." (35. p. 413-14)

Accepting the proposition that effective educational goals must be approved and supported by every group interested in school progress does not relieve teachers and educators of the task of formulating statements outlining the objectives they uphold. Fortunately, a considerable amount of thought has resulted in several such worthwhile summaries as "*Purposes of Education in American Democracy*" and "*Education for all American Youth*" prepared for the Educational Policies Commission. These statements while valuable and provocative are not particularly directed to the hopes and needs of our province. Alberta courses of studies have frequently in preface set forth the immediate objectives in certain subject fields. They cannot today be considered inclusive or up-to-date. The Department of Education, recognizing the need for further emphasis of major outcomes, is anxious that curriculum designs at every grade level embody functional objectives as an integral part of each subject course.

In the meantime, teachers individually and collectively can profitably consider the problem for themselves. Functional objectives in education must coincide, in large measure, with the mental set of the classroom teacher. Every teacher who strives for professional status must be willing to devote some effort to reflective thinking, from which should emerge a concept of the goals he can willingly promote and defend. It would be most unusual, and perhaps unfortunate, if the reflective thinking brings all our teachers to identical conclusions. It would be equally unfortunate if in the main, there is not a basic consistency and harmony in the goals to which the teachers of Alberta subscribe.

The search for such harmony of outcome will lead directly to an examination of the foundations upon which our thinking is constructed. If certain understandings can be established as postulates, the specific objectives resulting from our deliberations, while by no means identical, should surely be comparable and in general agreement. Those basic understandings we should discuss, since they underlie the whole superstructure of detailed objectives. They may for the purpose of this discussion be grouped as follows:

(1) What we know about social needs and social structures.

(2) What we know about the pupil and his growth.

(3) What we know about the learning process.

WHAT WE KNOW ABOUT SOCIAL NEEDS AND SOCIAL STRUCTURES

Plato defined a slave as one who works for the purposes of another. In that sense the school remains the vassal of the social order. Schools are financed by public funds; they owe their existence to public law; they must strive toward objectives which enjoy public support and social approval. It must not be supposed that this subservience to public control is a restriction and a handicap. By the very fact that the school is charged with the transmission of cultural heritage and knowledge and with the teaching of essential skills and abilities comes a perpetual opportunity for education to modify and influence the social pattern of the future. If this opportunity is to be utilized fully it is imperative that teachers know something of the basic pattern of our culture. They should be aware in some degree of the obstacles that impede desirable social changes; they should appreciate some of the forces that influence the climate of opinion; they should subscribe to some worthy goals for immediate action on a community, provincial and/or national scale. This is not to ask that teachers be experts in sociology nor that they spend their leisure hours in societal investigation. Professional standards should demand of teachers a vital interest in the affairs of the world, some introductory background of sociological study, and an alert interest in what experts in relevant fields have to say. Along with these must go native ability and insight keen enough to see causal relationships exerting themselves on the smaller stage of community action. The charges of pedantry and "ivory-tower reclusion" so often made against teachers is not without some foundation. Too often the urchin who peddles newspapers on the streets knows more of social reality than the teacher who sets the History examination which this same youngster might fail to pass.

In order to evaluate the contribution education can make toward human progress it is necessary to have some idea as to the kind of change to be most desired. What are the ends toward which we are working? What is the direction in which genuine progress lies? The changes we seek must in themselves be a fulfillment of the democratic concept. The purpose of all the devices and institutions of our culture should be to make living the richest, fullest experience it can possibly be. To achieve that end three elements become essential; an environment friendly and productive enough to release human time and energy to tasks beyond the provision of the necessities of life, a social structure sensitive enough to offer challenge, rigid enough to offer protection, and flexible enough to permit change; and finally, and most important of all, a balanced human personality capable of weighing the objective and the subjective, the quantitative and the qualitative, the immediate and the ultimate.

These three elements are already present in varying degree in our culture. The material environment has advanced remarkably under the impetus of power energy and mass-production factories. Its spectacular accomplishments are the wonders of our day. Social structure changes more slowly. A long range view reveals perceptible change, but improvement is slow and uncertain. In the growth of human personality least progress of all has been registered. The dogma that human nature is unchangeable has too long been accepted at face value. Too little has been known concerning the drives that motivate human behavior. Too much has been left to chance in the determination of individual values. A machine age has produced the leisure time but not the incentive to seek after the "life-fulfillment" to which reference has been made.

The task of education in our day lies primarily with these two latter factors, social modification and, more insistently, personality realization.

Educators turn more readily to the former. They feel that social change may be produced more easily, faster, and perhaps more discernably. They hope it can be fostered by edict and enacted in mass. The distress resulting so recently from fascist totalitarianism and barbarism illustrates all too clearly the need for steadfast perseverance in purpose and action by every person who espouses the cause of democratic living. The prejudice, distrust, and suspicion that mark international relationships today are but the feelings of common men all the world over enlarged and magnified. There is no easy formula for human growth, no panacea for human shortcomings, and certainly no promise of a Utopia in the distant future. The problem cannot be solved by new grants, improved buildings, or revised curricula. It seeks its answer within the classroom itself, in the human relations of the people who live there, in the examples of the teacher, in the behavior upon the playground. And the answer must be in terms of experiences in which science and art, mathematics and literature, dramatics and foreign languages all contribute in turn to add dignity and balance to the human nature.

The ability of the school to produce graduates competent to deal vigorously with today's problems and to plan effectively for tomorrow's problems depends upon more than good-will and noble intentions. Information and insight fundamental to the formulation of sound social objectives must be coupled with the courage to speak and act consistently and forcefully for those same ends. The brief summarization presented here, drawn from a survey of various expressions upon this major problem (12, 14, 15, 16, 41) centres around three essential considerations:

(1) What are the major trends in our western culture?

(2) What are the characteristics of a democratic society?

(3) What are the traditional values of democratic society?

1. **What Are the Major Trends in Our Western Culture?** The diagnoses of predominant tendencies in Western Culture that have been made by authors such as those listed in the bibliography are primarily documented by reference to social situations within the United States. In the main social development in Canada parallels that of the United States and teachers will find these references stimulating and informative reading. All that can be usefully done in a bulletin of this nature is to state certain trends that are recognized by the modern sociologist and in connection with each remind the reader of some of the issues involved and the areas to be explored. As in most current problems, controversial questions are involved. It is not the purpose of this section to suggest a partisan point of view; an attitude of realistic, objective analysis and impartial appraisal is recommended to the reader.

(1) *Trend*: The pattern of free enterprise, upon which our economic system is based, is being subjected to powerful modifying influences.

Considerations:

(a) Two major wars and a prolonged depression;

(b) Large corporations and cooperatives;

(c) Powerful labor unions;

(d) Growth of large cities;

(e) An increase in government regulation and control;

(f) Increased responsibility assumed by governments in public health and social welfare;

(g) Increase in the number of political parties.

(2) *Trend*: The organization of society tends to over-emphasize business activities and under-emphasize cultural activities.

Considerations:
(a) Government budgets;
(b) Relative size and value of public buildings devoted to business and to cultural activities;
(c) Facilities for education, recreation, and the arts;
(d) Religious institutions;
(e) The nature of radio and theatre programs.

(3) *Trend*: Competition continues to be the basis upon which most individuals seek to build success.

Considerations:
(a) Conditions of earlier days—land, resources, markets, government policies for encouragement of immigration and settlement;
(b) Present-day rivalry among businesses;
(c) Large organizations and the small entrepreneur;
(d) "Rugged individualism".

(4) *Trend*: Wealth and power tend to be concentrated in the hands of relatively few persons.

Considerations:
(a) Income tax returns;
(b) Interlocking directorates;
(c) Government control of monopolies, combines and cartels;
(d) The effect of big business on the significance of the average individual.

(5) *Trend*: Great individual mobility—both horizontal and vertical—with respect to social and economic position tends to foster a spirit of personal restlessness and insecurity.

Considerations:
(a) Facility of transportation and communication;
(b) Monotony of assembly-line jobs;
(c) The impersonality of the big city;
(d) The wide dispersal of the personnel of the armed forces during the last war;
(e) The stability of the family group and the responsibilities of its various members;
(f) The effect on community loyalty.

(6) *Trend*: City populations are increasing and rural populations decreasing.

Considerations:
(a) Statistics of urban and rural populations;
(b) Attractions of city environment;
(c) The effect of urbanization on the identity of the individual and the development of common loyalties;
(d) Masses, mobs, and democracy.

(7) *Trend*: A strong preference for youth has developed throughout the culture.

Considerations:
(a) The organization of social activities on an age-group basis;
(b) Preference to the 25-40 age group in labour, business and some professions;
(c) Old-age pensions.

(8) *Trend*: Most people seem to value money more than anything else.

Considerations:
(a) Desire for social and economic security;
(b) Scientific invention and mass production;
(c) Abundance of mechanical conveniences and physical comforts;
(d) Material wealth;
(e) The importance of moral, aesthetic and spiritual values.

(9) *Trend*: Governmental services, controls and staffs tend to increase.

Considerations:
(a) Statistics;
(b) The influence of the expansion of governmental function on democratic processes:
(c) Individual responsibility.

(10) *Trend*: A significantly important share of national effort and wealth is being drained away by non-productive burdens.

Considerations:
(a) Actual warfare;
(b) Armaments and war preparation;
(c) Cosmetics, tobacco and alcohol;
(d) Crime;
(e) Physical and mental diseases.

(11) *Trend*: The modern media of mass communication exert a powerful influence on modern society.

Considerations:
(a) The importance to a democratic society of complete and accurate information.
(b) Propaganda;
(c) Censorship;
(d) Advertising;
(e) Control of radio;
(f) Book clubs;
(g) Comics:
(h) Effect of motion picture programs.

(12) *Trend*: There is a widening gap between our technological and social-cultural institutions.

Considerations:
(a) Production marvels of the machine age;

(b) Problems of adequate distribution of goods;
(c) Labor-management relations;
(d) Health and social welfare institutions;
(e) Educational and cultural facilities;
(f) Economic and financial maladjustments.

2. **What Are the Characteristics of a Democratic Society?** Having reviewed the factors that seem to dominate the development of our contemporary society, we must attempt to delineate those tenets upon which a functional democracy can prosper and grow. Only as we objectively see what we are in comparison with what we should or might be can an effective re-direction of social growth be instituted. An historical survey would indicate that, in general, societies have entrusted the direction of their future to one of three policies. The first is a complete subordination to an arbitrary overlord of civil or military origin. Through a complete centralization of power, he directs the social order according either to his own concepts of wisdom and expediency or to a pre-plan devised by some philosophical theorist to whom he owes intellectual allegiance. The second is a reliance upon a ruling class, relatively few in numbers, ordained by heredity or selected by other means, possibly even by ballot and supposedly possessing special training, education or other qualifications. These rulers presumably seek an improvement of the social order either for benevolent or altruistic reasons or as a guarantee of their own continued domination. The third is an appeal to the judgment of the mass of common men. Selected representatives legislate and execute policies, but the ultimate authority is reserved by the electorate to be expressed through the franchise or through the various media by which the climate of opinion may be registered. In theory all democratic states adhere to this third system, but in fact such is not always the case. True sovereignty at certain times for certain reasons and for certain areas may be exercised by a limited group who, working openly or behind facades, manipulate the administrative machine without the knowledge or approval of the general electorate. That such manipulation is contrary to the welfare of the state or of the individual citizens is not always true, but that it is a direct threat to democratic ends and purposes is obvious. The only effective countermeasure for such malpractice and abuse is an education that promotes interest in citizenship functions and fundamental democratic beliefs and aims. What are the aims we accept as worthy goals for social growth?

(1) The democratic society maintains at all times and at all costs a respect for the individual. The individual is the basic unit of society and a respect for his personality is the basic premise for lasting social structure.

> "Respect for personality is the cornerstone. The conviction here is that the sheer fact of being human makes all men equal in a very important sense. . . . What is meant by this is perhaps best made clear by contrasting personal with other types. In a sense a workman respects his tools and materials, but he unhesitatingly manipulates them in sole accordance with his personal purposes. When we work with other human beings, however, we recognize that they have purposes as well as we. To disregard their purposes, to use them as tools, is to deny their equality, to show disrespect for personality, to flout the brotherhood of men." (22, p.33).

Implicit in our regard for the individual is a recognition of his capacity for growth, and a sense of responsibility to see that he is given a fair chance to develop and express such potentalities.

(2) The democratic society maintains faith in human intelligence. This belief is closely related to the respect for the potentialities of the individual. Certainly all men are not endowed with equal mental capacities, but we do maintain that normally men are capable of distinguishing good from evil, wisdom from folly, virtue from vice. Furthermore normal men recognize that the good, the wise and the virtuous will in the long run promote general welfare. Unless negatively conditioned by miseducation or some other circumstances most people will support these efforts directed towards social improvements. Indentifying individual welfare with general progress provides a double motive for genuine social concern. Some may contend that in a civilization as complex as ours the average citizen cannot see all the implications nor understand all the technicalities of social change. This argument proceeds to support the idea of government by "experts" or specialists. Insistence upon the sovereignty of the electorate should not necessarily detract from the pivotal position of good leaders. Those who accept the role of leadership must be sensitive to the needs and desires of the people they represent, and must be ready to advise wisely and to interpret accurately the mandate entrusted to their hands. But the nature of that mandate must originate in the group thinking of those common men who comprise the main body of our social order.

(3) The democratic society relies on an appeal to reason. Democracy deplores the use of force and violence. Frictions are inevitable, but those differences can be settled by conference, arbitration, and co-operation if the spirit of friendly settlement exists. There is much truth in the Chinese proverb that "He who strikes the first blow admits he has the weaker case." If violence and force are condoned the right of minorities and the processes of individual justice are in jeopardy. Violence, whatever its motives, makes for spiritual impoverishment and co-operation cannot exist side by side with coercion and force. The appeal to reason must go beyond lip service and find expression in the daily routine of living together as experienced by every law-abiding citizen. It is true that every society must maintain the means of internal discipline and self-protection, but those means are not measured in terms of police personnel and standing armies. The best protection is a will for peace and a determination in every citizen to abide by what Kant called the "moral law". With that will and determination a society can muster the physical means of protection both internal and external without fear of a Frankenstein that will rob them of their freedom.

(4) The democratic society expects of every citizen reciprocal responsibilities. Some define democracy as rights; others think of it as duties. Actually both are essential. The opportunities each individual enjoys are not of his making. They are awarded him by the collective action of his society. In accepting them he, in reality, accepts an indebtedness to his fellow citizens at large. To discharge that obligation becomes one of the most solemn contracts, for upon its collective fulfillment depends the general welfare of the future. "No man can be indifferent, no man can live a life apart from the rest, no man can enjoy the privileges of education and thereafter with a clear conscience break his contract with society. To respect that contract is to be mature, to strengthen it is to be a good citizen to do more than your share under it is to be noble." (23).

(5) The democratic society expects its members to place general welfare ahead of individual welfare and attempts in return to guarantee justice to all members. This is a corollary to the sense of responsibility mentioned above. Ideally every person in a society should be capable of maintaining his own comforts and welfare and have some surplus means and energies to contribute to collective projects and activities. Actually there

are always those who for a variety of reasons cannot maintain themselves if left to their own devices. To these less fortunate democracy offers assistance. Such help is sometimes labelled "State" aid. We hear a good deal about "State" welfare, "State" purposes, even "State" worship. It should be remembered that the State, like any other social institution, has no reality apart from the people who comprise it. Remove the citizens and all social institutions are reduced to a fictitious status. General welfare is, therefore, not state welfare in any real and lasting sense. It is actually the welfare of the fellow men of our community and as such is the concern of true humanitarianism. Democracy does not seek to increase the glory and welfare of the state. Too often "the glory and welfare of the state" actually consists of the glory and welfare of a privileged few. Instead it aims to open opportunities for participation in every department of life to all members of the group. The extent of those opportunities is a criterion of the democratic state and the extent of his participation is a criterion of the democratic citizen.

(6) The democratic society defends the civil liberties of all men, particularly those of minority groups. Certain liberties are so casually accepted in our culture that we may be inclined to overlook their full significance and the price previous generations have paid in establishing them. Freedom of speech, religious liberty, impartial justice and trial by jury, access to information, freedom of choice in vocational and home life are all taken for granted by Canadians. To maintain those rights for the bulk of Canadians today appears easy, but the important thing is our willingness to extend these rights in full measure to minority groups. To deprive any man or group of men of the full freedom to vote, to hold property, to speak freely is a most serious step. It not only establishes personal injustice and discrimination, but it sets the pattern by which those rights can be lost to the Canadian people at large.

Every liberty adds a responsibility. The right to vote implies an intelligent exercise of the franchise; freedom of worship implies a respect for all faiths; freedom of speech implies a responsibilty for truth and fairness in public utterance. With a deep regard for the preservation of civil liberties there must also be maintained an equally sincere devotion to the concomitant obligations of good citizenship.

(7) Finally, the democratic society looks with optimism to the future. This optimism is not the happy-go-lucky nor the devil-may-care attitude of irresponsibility. It does not arise from any myopic illusion that all men work for ends that are admirable. It is not founded on any doctrine of infallibility of progress for mankind. It does not flourish through ignorance of the powerful and subtle forces that operate to contradict all that democracy upholds. It is not deceived by any mirage of millennial peace close at hand. Its firm foundation is an unwavering conviction that we have chosen a path of progress and that such a choice adds strength to our cause. In defending that optimism we reject completely the claim that the optimist is the curse of western culture, that the fight against totalitarianism forces us to lay aside all truly civilizing attitudes, that the optimist glibly refuses to recognize the clouds and must necessarily, like the sundial, fail to tell time on stormy days. (21). No human being can live in the full sense of the word without self-respect. No human being can contribute his share to community living without a measure of self-reliance. No man gives his best when he lacks self-confidence. All the activities of life in which we are engaged are based on the hope of progress in days to come. Without that hope the very process of life itself becomes a bauble of momentary excitement. Like Paul of old we run the good race and fight the good fight not

in the hope of avoiding death but with the faith that, for this world and beyond, we have chosen values that are of lasting worth.

3. **What are the Traditional Values of Democratic Society?** All human life, whether it be the personal life of an individual or the collective life of a community, must have direction. The nature of that direction will depend upon the value pattern espoused by the individual or the community. The control of value patterns amounts in practice to the control of the social order; consequently, the derivative processes of value patterns and concepts are of utmost significance. Teachers have too long neglected this particular aspect of human growth. They have assumed that the home and the church carried adequately the burden of value patterns and spiritual development. They have frequently looked upon sound value patterns as an automatic by-product of a thorough academic school training. Some have rejected the entire matter as beyond control. Recent political developments have illustrated indisputably the primacy of value patterns in national affairs. Sociological studies have dwelt heavily upon the import of values in community activities. Psychologists have repeatedly emphasized the role of such items in wholesome integration of individual life. Any further disregard of the development of value patterns and attitudes must be considered contradictory to the advice of authorities and research students. Although value patterns are embedded in emotional foundations, the truly functional school will strive to effect direction and maturity in personal viewpoints. Along with academic competence, the school will carry its graduates beyond juvenile emotional reaction and ephemeral goals. Experimental evidence is sketchy and of a clinical nature, and valid measurement is almost impossible to establish. However, as Prescott points out, some conclusions are quite definite and certain findings are of major significance to educators generally and to classroom teachers in particular.

> "Without guiding attitudes the individual is confused and baffled . . . Attitudes determine for each individual what he will see and hear, what he will think, and what he will do." (24, p.37). "The development of attitudes, ideals, loyalties and purposes . . . was undertaken in former years by the taboos and group pressures. Now, swift changes (in society and in teaching) have left school people talking vague generalities about character education and floundering badly in practice. In contrast the dictators . . . and the demogogues . . . have not lost the art of winning loyalties and inciting prejudices. They generate emotions, attach it to a concept, and hold their followers well in hand as a consequence." (24, p,48).
>
> "The fact, however, that there exist . . . so many people who are cynical about democracy's ability to solve its own problems, who refuse to accept social responsibility or to face life's problems realistically, who want the government to be not only benevolent but paternalistic as well, who are unsympathetic . . . intolerant . . . bigoted . . . gullible . . . indifferent to justice, aggression and suffering—the fact that they do exist in large numbers offers a challenge to schools to provide an educational program which will equip (students) with . . . a value pattern which will enable them to meet the challenge of a complex and frightening world." (25, p.23).
>
> "If attitudes are influential in directing and motivating behavior, then the procuring of the same behavior throughout a population is dependent upon the possession of the same attributes by all the members of that population." (24, p.42).
>
> "The value concepts underlying strong loyalties are basic in

determining . . . the picture that the individual holds of what he wants to become and, incidentally, of what he wants the world to become. The values furnish the integrating fabric which holds life together and gives it unity and significance. . . They determine what is worth striving for and what is worth risk to hold or maintain.

"A word of caution . . . lest . . . the above be justification for propagandizing and regimenting children. . . The active loyality which marks maturity springs out of the individual himself; it emerges from a growing belief in the wholesomeness, the desirability, and the value of the institution or the concepts to which he becomes loyal." (24, p.104).

What has been quoted here can perhaps be summed up in these generalizations.

(1) Attitudes and values are the major determinants of our behavior.

(2) Attitudes and values are inseparably linked with the emotions, and are most decisively developed through emotional activation.

(3) The need for greater allegiance to improve values can be ascertained by a cross-sectional survey of democratic populations.

(4) Mass loyalties are but the collective result of common individual loyalties.

(5) Individual value patterns become the fabric of life itself.

It has on occasion been suggested that democratic education, while rejecting the objectives of fascism, might well examine the methods used by totalitarianism to build loyalties and attitudes. Actually, in education, ends and means cannot be separated. Whereas we place the individual in complete prominence, the fascist nullifies individuality in favor of the institution, particularly the state institution. Their goals and methods intertwine to produce regimentation, imposition and nonentity. Democracy aims at freedom, inspiration and harmony. Social strength in any culture is measured by the homogeneity of individual action. To produce such homogeneity we must have communal values that can be converted into action politically, economically, socially and personally. What are the values that give fibre to our social order?

(1) Democracy values co-operation and social concern.

(2) Democracy values honesty and integrity in the broadest interpretations.

(3) Democracy values information—accurate, specific, abundant and universal.

(4) Democracy values home and family relationships.

(5) Democracy values industry and activity—directed in accordance with sound scientific practices.

(6) Democracy values aesthetics, in every phase of environment.

(7) Democracy values spirituality—and is in truth man's efforts to interpret transcendental values in a material world.

WHAT WE KNOW ABOUT THE PUPIL AND HIS GROWTH

1. Growth Studies: Continuous association with children of one age group has upon occasion tended to dull a teacher's appreciation of the panorama of growth represented by the maturity of each child in the class. This imperceptibility of change implies to some degree a lack of reaction to child needs, an insensibility to teaching opportunities, perhaps a deterioration of enthusiasm, certainly the absence of one of the most gratifying experiences within the teaching profession.

At birth the human being is one of the most helpless and dependent creatures of the animal kingdom. His sense organs function imperfectly, his actions are largely reflex, his behavior completely unreasoned. His body is misproportioned ,his skull plates are disjointed at six different spots, and his spinal column has only one curve rather than the necessary three. He lacks all discrimination with respect to food selection or association with other human beings. He has none of the instincts or intuitions related to self preservation that so frequently characterize young of the animal species.

All this changes rapidly within a few weeks. His behavior pattern takes on specific actions. He becomes conditioned to feeding habits. Skeletal and muscular growth, heart development and perceptive functioning proceed amazingly. Weight triples during the first year, a growth rate that if continued would amount to more than two tons by school-entry age. Upright posture, locomotor skill, speech development, increasing perception, body control and co-ordination are acquired during the first three years. Physical change is likely never again so rapid as during those three years. For a full eighteen years growth and change are pronounced. By high school graduation each person has neared his maximum growth and grace. Muscular strength, skeletal maturation and endocrine stability have all levelled off to make adult physical status (3, p. 163-268).

Even more astounding from the view point of education is the change in the social-emotional-personality field. At birth the child is completely uninhibited and impulsive. His responses tend to be of an all-or-none variety, with little sense of quantitative graduation. He is quite unconscious of self. His world is likely a succession of inward desires, mostly physical, with resultant satisfaction from outward sources. Time to him means now. Interests are physical only.

As he grows he exhibits an intellectual growth impossible to any other form of life in the world. He readily learns to recognize others by sight or sound, he becomes conscious of self desires, responds to more subtle stimuli, behaves in terms of past experiences, engages in thought processes that depend upon memory, prediction, and abstraction. He is introduced to such integrating concepts as honesty, loyalty, morality, responsibility, self-evaluation, and tenacity of purpose. In our modern culture he must master a frightful number of inhibitions and mores that we know as conventions. The restraints concomitant with civilization that are placed on primitive behavior impose such a taxation on the human organism that the prevention of resultant frustrations and regressions becomes a major problem.

During adolescence there comes a gradual but none the less a very marked change. The child tends to become over-conscious of self. He undertakes serious comparison of himself with others in matters of appearance, social and vocational possibilities, frequently associating such examination with feelings of supersensitivity and insecurity. Family dependence shows a consistent decline and sex consciousness assumes prominence. A keen interest in social customs and group mores dominates many of his decisions.

Gradually, as he moves toward post adolescence, his emotional and social attitudes tend to crystallize. His prejudices he rationalizes to his own satisfaction. His inclinations to direct, perhaps impetuous, action are tempered by discretion. His motives and desires reach fuller stages of insight and verbalization. The peak of exuberance is past and he moves toward relatively greater stability of outlook that should mark full adulthood.

As we move into a brief discussion of what research has revealed of this phenomenon we call "normal human development" several generalizations should be kept in mind.

(1) The child reacts as a unity. Recognizing many areas of development we are tempted to pursue each as a separate study. Psychologically we should attempt exactly the opposite. Every component, each physical and intellectual process, has a direct relationship and influence upon all other components. "The whole child," repeated so often as now to become platitudinous, must nevertheless remain always as the focal point of major attention.

(2) Abnormalities occur in all phases and in all degrees. Those most frequently encountered in physical areas arise from nutritional deficiencies, hereditary influences or endocrine imbalance. Abnormalities in personality growth are more difficult to isolate, diagnose and treat. Deliquency, inferiority complex, excessive shyness, over-aggression and similar overt manifestations of poor adjustment arise frequently through causal relationships most difficult to trace.

(3) Growth seldom represents continuous uniform change. Fluctuations in growth rate, even minor reversals, are frequent within the developmental pattern of any individual. Smooth curves developed for graphing purposes usually represent very short time periods, wide intervals of measurement, or the grouping of several growth functions.

(4) Individual differences of significant magnitude are found in every group study of consequence, regardless of the aspect of growth under consideration.

A word should be said at this point respecting the nature of research now proving most fruitful in growth study. Prior to about 1930 practically all problems were undertaken by individuals who made a group study of a given section of the population, selected according to chronological age, school grade or similar basis. The object of such research was generally a single factor of growth or at least a definitely limited field. Possibly the best example of such a study was that conducted by Dr. Lewis M. Terman in his investigation of gifted children. (7) Obviously such a procedure, while making valuable contributions, suffers inherent faults. One man simply has not the time nor the background to make observations and analysis of all areas of child growth that may be significant to any given item of development. Furthermore, the practice of examining large population sampling at one time supposes that arithmetical averages as commonly used accurately reveal typical growth development. Norms and scores may easily become a Procrustean bed on which we stretch every child about whom we collect quantitative data.

Modern growth studies are intended to be much more comprehensive. The relationships between such varied items as intellectual ability, nutritional status, home environment, endocrine balance, basic metabolism and academic achievement are regarded as more important than any item taken singly. The research techniques necessary to evaluate the complete pattern

of growth will normally be of interest to teachers. Modern investigation methods are marked by two significant changes:

(1) "Longitudinal" studies have replaced "cross-sectional" studies. Selected population samplings are tested repeatedly over a period of time, possibly many years, and careful records are kept along with detailed biographical annotations. This emphasis upon the individual rather than the group tends to remove the distortions and errors involved in studies which classified children by chronological age alone.

(2) Individual investigators have given way to unified studies involving large numbers of researchers and scientists. Obviously the magnitude of the task of testing a useful population sample in a longitudinal study was beyond the capacity of one or even a few researchers. Whole faculties of some universities have united their energies, or, in many cases foundations of considerable size have been established to observe large numbers of children over a period of years, seeking evidence in every phase of child growth for which metric methods are available. One representative investigation is the Adolescent Growth Study, Institute of Child Welfare, University of California. The magnitude of the undertaking may be judged from the following survey of the study as recounted by Dr Harold E. Jones:

(a) 4,500 children were selected for study, all living in the vicinity of Berkeley, California.

(b) The study extends from babyhood to adulthood, with special emphasis on adolescent changes. (It is of course still continuing.)

(c) Physical examinations covered maturation change as well as health investigation.

(d) Examinations occurred at intervals ranging from one per month, to one every six months.

(e) Measurement charts recorded: chest breadth, chest depth, head, arm, leg, trunk measurement as well as the usual height and weight records.

(f) Photographic records were kept of age changes.

(g) X-ray pictures of hands and knees were taken at 6-month intervals.

(h) Optometric examinations and records were made.

(i) Periodic tests were recorded of motor skills, muscular strength, intelligence, and verbal learning.

(j) Periodic tests of basal metabolism, blood pressure, body temperature, pulse rate, urine analysis, and various glandular activity were made.

(k) Complete records of scholastic achievements were used.

Elsewhere studies of similar magnitude are underway, sponsored by the Harvard Growth Study, the Iowa Child Welfare Research Station, the Society for Research in Child Development, the University of Michigan, and the Institute of Human Relations at Yale University. From the outcome of such concentration of effort the available knowledge respecting growth patterns, diagnosis of malformations both physical and mental, predictability of development, and remedial treatment for both routine disabilities and special needs should be considerably increased.

After this hurried sketch of the general picture of growth some further detail on special areas is now undertaken.

Physical Development

Educationists are concerned with physical growth research for two primary reasons:

(1) To learn what we can respecting the limits set on the individual by heredity in order that we might better appreciate the areas open to complete or partial control through the manipulation of environmental factors.

(2) To determine the relationship that exists between physical maturation and the less tangible aspects of intellectual, emotional, social and spiritual development.

Pre-natal physique, even in births representing normal gestation, shows wide variance. Even in this stage factors of both nature and nurture are evident. Nutritional status and general health of the mother has a decided effect on the growth, but many of the body characteristics are clearly hereditary. So little is known of the nature and interrelationships of chromosomes and genes and their behavior can be so poorly observed and little controlled that our knowledge of the transmission of hereditary features is quite imperfect, and in many cases theoretical. Apparently, sex is determined solely through the matching of chromosomes. Certain physical features such as eye color, constitutional type and physiognomy are likely determined by some complexity of gene combination. Examples of inherited defects include some heart ailments, some types of deafness, certain skin disease and the sex-linked hemophalia. Environment has clear control over nutritional status, most illnesses, language development and all routine daily behavior. In such areas as mental alertness and handedness a controversy still exists as to the controlling influence. One favorite avenue of research in this disputation is the study of twin children, particularly the study of identical twins reared in separate foster homes. (1).

Physical development during the first few years of life proceeds so rapidly and observational circumstances are so favorable that much profitable research has been done during this period. Visual, auditory, gustatory and olfactory sensivity open new worlds of experience. Spatial and body exploration and manipulatory activities replace reflexes. (2). The development and control of muscular action has a direct bearing on sensori-motor learning and on proper activities and routines for the primary grade program. As the growth rate begins to slow down there appears to be a tendency to turn more to metric research of one type or another with consequent statistical enumeration An over-indulgence in mathematical computation has not infrequently brought grave misunderstanding to many partially-informed teachers and parents. The child has been projected against or even submerged in a maze of standardizations and norms that looked very impressive but really indicated nothing more than general tendencies. Fortunately we now take a less idolatrous view with respect to statistical outcomes particularly in physical growth and its significance. A brief reference to two studies illustrates the point,

(1) Pryor has developed height-weight charts on a completely new basis. Many considerations have been introduced beyond the usual correlation of height and weight in her evaluation of the state of physical welfare and nutritional standards. The resultant theory of multiple normalcy for various body types has been widely accepted. (3).

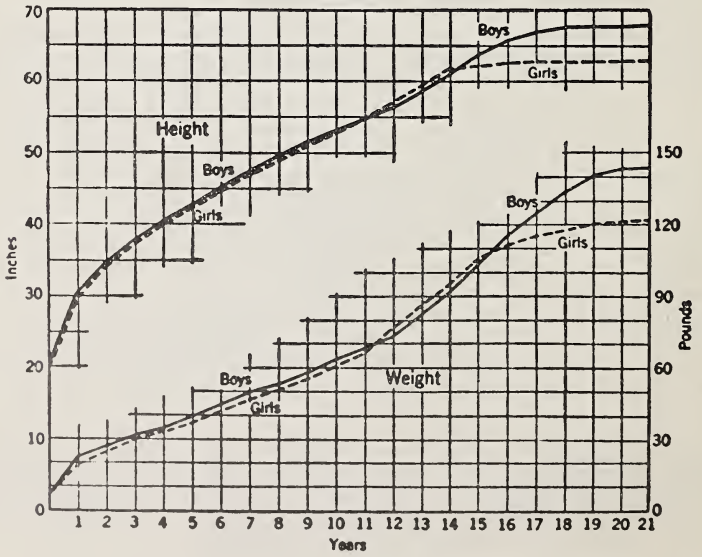
(2) The California Adolescent Growth Study under the direction of Dr. Harold E. Jones has undertaken an integrated study of physical, mental and personality development on a long term basis. It constitutes one of

the finest of "longitudinal studies" previously mentioned. The conclusion of one sample case report shows the depth of investigation:

"John has been handicapped by unhappy relationships within his family; economic stress; ill-health; visual defects; an inferior physique; delayed maturity; a certain obtuseness in social contacts; lack of athletic abilities; and a lack of ability to win goals which he has most desired in connection with a strong drive for popularity and social esteem. His school career, under the heavy accumulation of handicaps, has some degree of success and effective adjustment. Viewing this record, from the sixth grade to college, one cannot help being impressed by the amount of idiosyncrasy which can be encompassed within a "normal" range; and by the complexity of the problems which can be faced and even to some extent surmounted within a social structure which has done little to provide support or understanding." (2, p. 591).

Physical growth should be of basic concern in determining what classroom experiences each class should be expected to undertake. Within limits of practicability the teacher should differentiate individual programs in terms of physical maturity. Growth in size, strength and skill requires continuing modifications in handicrafts, music, physical education, and games. Physical changes accompanying puberty herald changes in interests, emotions, self appraisal, and leisure-time companions. Conditions of living involving rest, food, exercise and medical care influence the intellectual performance and the personality of the child through the relationship each may have to physical welfare. The educational program should remain sufficiently flexible to retain close congruency to the physical status of the student.

CHART I



Growth in height and weight from birth to 21 years (13 p. 13. Used with permission of the publishers.)

Changes in size and rate of growth will naturally have important psychological and educational accompaniments and consequences. Chart 1 illustrates the normal growth curves in height and weight for boys and girls. A boy between the ages of 6 and 18 normally grows 50 per cent in height and 300 per cent in weight. Attitudes of dependence, or even fear may be replaced by feelings of domination or possibly aggression. Vocational preferences will change several times. Preferred play activities will change from toys such as a ball, blocks and a wagon to "dates", football and an automobile. Strength of grip may triple in 10 years. At any given age the strongest boy in the class may possess three times the strength of the weakest. The various parts and organs of the body develop at different rates. Body proportions alter and each tissue system has its own growth pattern. At adolescence, for example, the skeletal growth exceeds the muscular growth resulting in embarrassing awkwardness. Clearly such changes and differences are important in determining the total psychological development. Body type will conform to certain genetic inheritances. The small wiry lad may be achieving normal physical growth despite his deviation from textbook "norms". The biological controls governing growth and metabolism are still largely unknown. Efforts toward too great a conformity in physical growth, interest pattern or educational progress will result in distress to all concerned. The classroom teacher must maintain a primary concern for the optimum physical welfare and comfort of the individual child through the combined efforts of the home, the school, and health and medical authorities. His judgement will be sharpened by an intimate knowledge of general conditions and progress marking acceptable development. The report by Dr. Pryor (3) constitutes one of the least technical complete statements for teacher reading.

Intellectual Development

Present knowledge respecting the growth and development of mental capacities must be acknowledged to be far from complete. Psychologists cannot yet agree fully as to what constitutes native intelligence. There is general support for the idea that it can be measured only through its manifestations in human behavior, both in discrete activities and in general adaptation patterns. One writer who has surveyed the field describes it as "an inherited capacity of the individual which is manifested through his ability to adapt to and reconstruct the factors of his environment in accorddance with the most fundamental needs of himself and his group." (8, p. 623).

The use of the term "inherited" in the previous quotation immediately provokes the question of heredity versus environment in the determination of intelligence. The issue has been thoroughly discussed by the most competent authorities without a final settlement satisfactory to all. One school of thought, upheld largely by Terman, Merrill, Thorndike, McNemar and Goodenough, favors the theory of the constant I.Q., and they are able to summon to their support experimental data at great length. The conflicting view, developed largely at the University of Iowa by Stoddard and Wellman, insists that intelligence is a variable factor within the individual which fluctuates according to the training, experience and stimulation received. Selected experimental studies and full bibliographical references can be located by interested readers (2, p. 177). For educators in public service the final issue tends to become academic. For practical purposes we would do well to follow Freeman's advice. "Intellectual growth is a composite effect of maturation and education. The one factor is no less fundamental or important than the other. If either were the more important it would be education, since this is the factor which is under our control." (2, p. 160).

Beyond the question of constancy of I.Q. and its determinants, there remains much to be said respecting general development in mental abilities. One of the finest reports of empirical study on the topic is that of Freeman and Flory (2, p. 147-160). A brief summary of the problems and their finding are revealing.

(1) What is the rate of growth at successive ages or periods, including fluctuations, as expressed in the growth curve?

Findings: A fairly smooth curve represents general growth. This is, nevertheless, something of mathematical fiction since all curves of individuals exhibit variation from the average. The characteristics in the general curve include:

a. a slight acceleration in pre-adolescence.
b. a moderate decline in rate of growth beginning in early adolescence.
c. a continuance with very little further decline in rate to the end of the adolescent period, or nineteen or twenty years.

(2) What is the terminus of growth or the age at which rate increase aproaches zero?

Findings: The terminus of growth could not be determined for the reason that an increase in ability was found up to and including the highest age studied. This fact justifies a statement that the age of full intellectual maturity is several years beyond nineteen.

(Note that Terman, Boynton, Pinter and others favor an earlier mental maturation age. See 8, p. 628).

(3) What difference in rate of intellectual growth are attributable to sex?

Findings: On the combined score of the four tests used sex differences appear negligible. This result is interesting in light of proven differences in rate of physical growth. The curves clearly indicate no comparable differences in rate of intellectual growth.

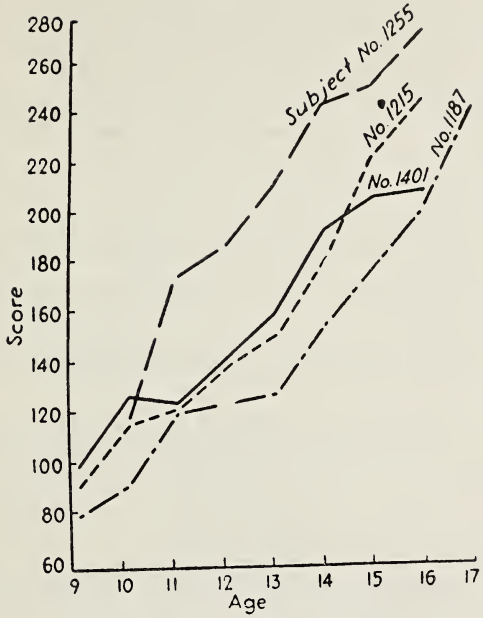
(4) What individual differences in rate of growth can be detected?

Findings: Individual differences in rate of growth, and especially in fluctuation of rate and form of growth curve loom large. These differences place a limit on the predictability of intellectual growth for any individual. Such prediction must be considered a matter of probability rather than of certainty, and the margin of error is larger than is often recognized.

(5) How does the pattern of growth compare at different levels of ability?

Findings: The brighter children show accelerated rate of intellectual growth in later childhood (pre-adolescence) and their rate of growth slows down somewhat in middle and later adolescence, whereas duller children show an almost constant rate of growth throughout the entire period. Qualifying conditions to this last generalization include possible limitations in the tests used and the fact that ability range investigated was not extreme. (The "dull" group showed 90-100 I.Q.) It does, however, raise interesting speculation as to the full possibilities of high school and college education for the "average" junior high pupil.

CHART II



Individual growth curves showing accelerated development. (From Monograph No. 2, 1937, Society for Research in Child Development. Used with permission of publishers.)

Mention must be made of the mental testing movement in connection with intellectual growth. This is a comparatively recent development and owes its origin to the interest of psychologists in individual differences. The first test, practical for educational application, was worked out by Alfred Binet in his efforts to classify Parisian school children in 1895. His test consisted of individual performance or reaction to a number of test situations, many of which were directly related to educational training. Binet continued investigations using multiple test situations, and to him we owe the idea of intelligence as a general function reflected in a variety of behavior responses. He is also credited with the derivation of the "mental age" concept. His work was taken up by American scientists, notably by Dr. Lewis M. Terman, who in 1916 published the first Stanford-Binet revision. This test rapidly attained prominence, and added materially to our understanding of mental abilities.

(1) It was standarized on a large number of American-born white children.

(2) It standardized each test item for accurate age placement.

(3) It refined the test items to eliminate as far as possible, education, language differences, rural or urban differences and all other discernible environmental factors.

(4) It popularized the term "intelligence quotient" or I.Q., which is derived by dividing the mental age as determined by the test by the chronological age and multiplying the quotient by 100.

A further refinement of the Stanford-Binet test appeared in 1937 after a 10-year preparation. It is recognized as one of the more accurate of the measures of intelligence when given under prescribed directions. (17).

In 1918 a distinct movement began when the American army undertook the use of mental tests in their selection of officer personnel. The resultant Army Alpha scale served as a model for many group tests which followed. The group test opened new possibilities for use in schools.

(1) The test was generally a pencil-and-paper type easily administered.

(2) The scoring was objective, removing the necessity for highly trained administrators.

(3) Time and cost of administration and scoring were greatly reduced.

While carrying certain inevitable limitations the group test has proven popular and literally hundreds of such tests have been placed on the market.

Intelligence tests have a variety of uses in educational, psychological and legal connections. In ordinary schools they are of merit for several reasons: (18, ch. XIV).

(1) They are useful in evaluating the general achievement of any group of pupils.

(2) They can be informative with respect to problems of individual pupils.

(3) They are frequently used for determination of school entrance age.

(4) They are sometimes of value in homogeneous grouping.

(5) They may be used in selecting candidates for special classes.

(6) They are valuable in educational guidance.

(7) Counselors frequently use mental tests in adjusting pupils to school work and problems.

(8) Mental tests are widely used in admission programs for college work.

Mental tests are most useful instruments in many tasks that confront the educator. It is, however, always necessary to sound a caution with respect to their interpretation. No teacher for example, is justified in condemning or exonerating pupil behavior on the sole basis of an intelligence test. I.Q. scores offer **one** source of information regarding students, but they are only one source, and, even then, are possibly more inaccurate than is generally supposed. Whenever a teacher accepts mental test scores as evidence in any situation she should be prepared to recognize the following limitations:

(1) The mental test is a sampling of responses, not a review of the entire field of response. True, the sampling is selected with the hope of fair representation but the sampling is necessarily small and may be of limited statistical reliability.

(2) Mental tests must measure capacity indirectly. Capacity is potentiality for behavior, and we can deal with behavior only. In such behavior it is inevitable that we are measuring not merely native endowment but also the results of training and education.

(3) Present tests can give approximations only. Repeat scores even on the same test will not correlate perfectly. This is particularly true for group tests or for individual tests administered by untrained personnel. Stanford University insists upon a thorough one-year training, including observation and supervised practice, before they will certify as to eligibility to administer the Stanford-Binet test. To teachers who are prone to accept I.Q. scores as indisputable evidence the following estimate of probable error in the Stanford-Binet test should be revealing: (17, p.40) The chances are even that a score which falls in the I.Q. range of 90 to 109 does not differ from the true score in such a scale by more than 3 points, and the chances are five to one that it does not differ from

the true score by more than 6 points, or twenty-two to one that it is not in error by more than 9 points. The probable error of a score above 130 I.Q. is approximately 3.5 points, and for a score below 70 I.Q. it is only about 1.5 points.

To this statistical error must be added the discrepancy that may be involved in the actual scoring due directly to the interpretation of the administrator. The final score of this top-rated intelligence test must accordingly be accepted as somewhat less than infallible. In turn the possibility of error will increase considerably for any single group test.

(4) Normalcy includes a rather wide intelligence range and there are no sharp demarcations in graduation. Certain arbitrary levels have been set by psychologists but these are admittedly arbitrary and for writing convenience only. A score of 90 to 110 is generally considered as indicative of average capabilities with exceptional cases moving to extremes of 40 to 160. Score differences of less than 4 or 5 points are hardly valid grounds for pupil differentiation. Too many uninformed people begin to think of 98 I.Q. as bordering on feeblemindedness and 130 as inevitable genius.

For the benefit of interested teachers and principals the following tests of mental ability are recommended by the Department of Education for use in Alberta classrooms.

(1) Individual Tests:

Individual tests should not be administered except by persons with special training in that particular field .Rather expensive kits of equipment are necessary, and the tests require exact administration and interpretation to produce valid classifications. The Weschler-Bellvue Intelligence Scale is outstanding for pupils of 10 years and over. The Revised Stanford-Binet Scale is highly regarded. It has norms as low as 2 years of age, but results are questionable for any children below 5 years of age.

(2) Group Tests:

Group tests give perhaps less accurate measurement than properly-administered individual tests. Their easier administration and lower cost make them popular. Warning should again be given against the indiscriminate use of intelligence tests and intelligence scores. The recommended tests are listed aphabetically. Orders may be placed through the School-Book Branch, Department of Education.

(a) **Dominion Group Test of Learning Capacity.**

Two forms. Four levels: Primary (Kindergarten—Grade 1): Junior (Grades IV-VI): Intermediate (Grades VII-IX): Advanced (Grades IX-XII). Time 25-37 minutes.

(b) **Detroit Beginning First Grade Intelligence Test.**

One form. One level. Useful for pupils entering Grade I or in early months of Grade I.

(c) **Kuhlmann-Anderson Intelligence Test.**

One form. Nine levels, one booklet for each grade to Grade VIII, and one booklet for Grade IX to adult. Time 30-60 minutes.

(d) **New California Short-Form Test of Mental Maturity.**

One form. Five levels: Pre-primary (Kindergarten—Grade 1): Primary (Grade I-III): Elementary (Grades IV-VIII): Intermediate (Grades VII-X): Advanced (Grade IX-Adult). An I.Q. can be computed from non-language factors alone if necessary.

(e) **Otis Quick Scoring Mental Ability Test.**

(i) Alpha, Grades I-IV. Two forms. The same test can be used as verbal or non-verbal.

(ii) Beta, Grades IV-IX. Four forms. Time 30 minutes. (The Beta test is a revision of the Otis Self-Administering Test of Mental Ability, Intermediate level.)

(iii) Gamma, Grades IX-XII. Four forms. Time 30 minutes. (The Gamma test is a revision of the Otis Self-Administering Test of Mental Ability Higher level.)

The Otis tests are recommended for general use.

For teachers interested in secondary grade levels two additional tests are recommended.

(f) **American Council on Education Psychological Examination for High Schools.**

New edition each year. One level. Grades IX-XII. Time 54 minutes.

(g) **Terman-McNemar Test of Mental Ability.**

Two forms. One level. Grades VII-XII. Time 40 minutes.

Teachers interested in further information regarding other standardized tests for either intelligence or achievement should direct inquiries to the Curriculum Branch, Department of Education.

Exceptional Children

When the early American zealots of democracy declared that all men are created equal they were not thinking in terms of physical or intellectual development. Men are in fact endowed with abilities of varying degrees, and through those differences education seeks to make its contribution to the progress of the race. Equality of educational opportunity has become a standard expression for many writers. Too often their argument actually suggests identity of opportunity, either in terms of program content or in financial expenditure. Regardless of how we measure the "equality" involved in ideal programs the real purpose of schools is to free each child's path of all artificial barriers in order that he may become whatever his abilities and desires most fully justify.

Differences exist in every phase of human development and in nearly all conceivable degrees. There are many cases where deviations become so distinct as to be conspicuous, and to those children the school should show special deference. Actually many gross misconceptions still exist as to the nature of atypical children. Common examples are the belief that very bright children are socially maladjusted and that dull boys are invariably hulks. Actually, gifted children as a group are well adjusted socially (2, p. 304) and dullards as a group tend to be undersized and underweight for their own age group (2, p. 88). More attention and study regarding atypical students is essential if we have any hopes toward a true equality of educational opportunity designed to meet their needs. A good discussion of the implications for the classroom teacher is found in Dr. Fenton's *Mental Hygiene*. (10, Ch. V. VI. VII).

The prevalence of exceptional characteristics, both physical and mental, is greater than is generally recognized. Incidence of physical and mental abnormalities has never been accurately determined (9, p. 95). Conservative estimates would indicate that of 500 children of school age at least 75 are undernourished, 50 have impaired hearing, 20 have defective speech, 20 have weak or damaged heart conditions, 10 are mentally subnormal, and 2

have only partial or no sight. This number does not count those suffering from crippled conditions, established or suspected tuberculosis, emotional instability or other similar handicaps. Not all these children are so seriously afflicted as to require special classes. They do, however, constitute a genuine problem in our schools, as any teacher can verify. Their presence represents special attention, additional time, extra costs. It is accepted that Alberta schools must make an effort to provide for the growth and guidance of these handicapped children no matter where they live throughout the province.

The majority of handicapped pupils are enrolled in the regular classrooms of our schools. Generally speaking, if the handicap is not too marked, it is wise to keep the child in his usual class group. One of the most difficult things is the prevention of some psychological quirk or emotional disturbance in the child who has to carry the added burden of the physical disability. The child, because of his handicap, may easily develop some undesirable negative habits. He may overwork in an effort to keep up with his classmates. He may excuse himself, work up self-pity, or throw temper tantrums to gain ends he cannot otherwise attain. The teacher must recognize the symptons and work to correct them. She must know as well how to provide assistance, help and encouragement in such a way that the child and his classmates are perhaps not even aware of the special aids. For example, the low vision child must never face light or glare. He must sit near the blackboard. He must have special time in reading class. He must be provided with books of clear type for easier reading. He must be permitted frequent change of assignment to avoid fatigue and nervousness. Glasses must be cleaned and adjusted for smaller children, and extra time be found somehow for individual lessons to avoid excessive eye strain. One major advantage of the enterprise program is that assignments and tasks can vary to suit the needs of exceptional children. The work for these special children in the regular classroom is unspectacular, perhaps seldom noticed, but it goes on steadily, day after day, in nearly every school in the province, and thousands of handicapped Alberta children are reaping the benefits of a better education.

Children with more serious defects require the advantage of special classes. These can normally be provided only in urban centres. Children with very serious defects of low vision, poor hearing, or mental retardation should be grouped for instructional purposes without segregation from normal social and recreational contacts. Currently, sixteen such classes are in operation in Alberta, all located in urban areas. Teachers with added training and particular aptitudes can provide individual instruction since class enrolment is kept low. Activities can be designed to suit circumstances and personalities. Effort should be made to insure a happy cheerful atmosphere within the classroom, and a normal healthy adjustment in all contacts outside the class itself. Therefore special classes are generally housed in a regular school plant, and the co-operation of the full staff is necessary to provide wholesome opportunities for out-of-class contacts. Handicapped children should participate in school activities wherever possible, in assemblies, intra-school sports, and regular playground activities. School meals are sometimes provided to reduce dangers of street travel in hours of heavy traffic. Complete and accurate records are, of course, essential for every student in special classes. Sound mental hygiene is fundamental to success. Emotional tension does more to impede recovery or control than any other single factor. Scolding, defeatism, and pampering are avoided at all costs. Careful guidance and training can equip these students for a useful happy life with adequate compensations for what may seem undue misfortune.

Special schools are needed for the education of those children with

extreme handicaps, such as near or total blindness or deaf mutes. No schools are available in Alberta but service is provided by the Department of Education through facilities at centres located outside the province. Teachers who are aware of children anywhere in the province who require such special training should report such cases to their superintendent or directly to the Secretary, Department of Education.

The treatment and concern already mentioned apply to only one end of the scale of exceptional children. Some attention is long overdue to the needs of the child of superior intellect or of outstanding talent. Many school systems have tried various plans of ability grouping intended to achieve greater homogeneity of achievement within each class. Other schools have tried devices such as "double" promotion, semi-annual promotion or special instructional plans. The pros and cons of such schemes have been long debated, and in many instances the plans have been modified or withdrawn. On the other hand certain city systems have long established classes where enriched experiences are presented to selected pupils. Undoubtedly any such plan requires careful thought and administration. Under proper direction the gifted child can be stimulated to work at capacity without interfering with or curtailing in any way the opportunities of classmates. Under most circumstances it may be highly advisable to enroll the superior pupil in regular classes. In these instances some enrichment program is advisable, although its administration is often most diffcult. In those school systems fortunate enough to have special classes for superior students care in teaching and administrative procedure can avoid serious difficulties. Dr. Heck sets forth principles important in the planning of such a program: (45, p. 402).

(1) It should provide the gifted with the same opportunity to develop their talents that is provided for the average child and for the child of low I.Q.

(2) It should guard against the development of conceited individuals among the gifted.

(3) It should provide for social and physical placement, as well as for proper mental placement.

(4) It should develop a real enrichment program.

(5) It should prevent the development of wasteful and bad social habits.

(6) It should seek for each gifted child a sane, all-round development educationally, socially, physically, and morally.

(7) It should be based, in the last analysis, upon the most careful study of each child.

The challenge presented by the gifted children in our classrooms has not been adequately met. A major problem is that of convincing the public generally that a genuine wastage is taking place when superior students achieve only average results. Education appears to have been more concerned with the problems of the dullards and the handicapped. The modern school is sometimes accused of fostering mediocrity. Usual teaching practices are aimed at the level of the "average" child and may fail to challenge the pupil of superior capacities. Terman's summary of findings in his study of one thousand gifted children (2, p. 304-5) gives an insight into what we might expect from and offer to the highly talented groups in our classrooms. Unless some challenge commensurate with their abilities is presented they lose interest, acquire poor work habits, and develop a distaste for the school that is to them dull and uninteresting. Many learn to take on a "protective coloration" to avoid extra tasks and become indistinguishable in the usual classroom, attaining neither academic proficiency nor social leadership.

Much has been written about the retarded pupil and his problems. A strong case can be made for the argument that the truly "retarded" pupil is the one whose capacities are outstanding but whose school progress is only average. To stimulate each pupil to his best efforts, to demand of each according to his ability, to nurture in each worthy desires, and to bring to all a genuine, social concern is the real task of teaching.

Personality Development

Personality is one of the most subjective phases of human development and possibly one of the most neglected by educators. Any school accepting an "organismic" approach to child growth must be concerned with the importance of developing desirable personality traits. The pre-school and out-of-school environment introduces powerful influences, often incompatible with school purposes. When such a clash of forces occurs the natural tendency of the school may be to take manifest action that may heighten the tension of conflict in the hope of subordinating or removing the undesirable motivation. Actually, such a course may prove harmful and devastating to the personality development of the child. Yet the orderly progress of desirable growth demands that the individual resolve clearly the conflicting issues that force themselves upon him. Only then can he evolve a pattern of behavior that provides consistency and direction toward ends that appeal to him as worthy of final attainment. To assist in that resolution of forces and in the fostering of desirable outcomes the school must clearly recognize the basic factors that energize personality expansion.

Authorities agree that effective personality requires what is commonly termed "integration." By this is meant a more or less smooth interaction of all the aspects of feeling and thought that characterize the "private" or inner consciousness. All the stimuli of the external world and of the inner mental processes coupled of course, with stimuli arising directly from the physiological side of living may combine to produce simultaneously a wide variety of demands. Out of this complexity one must select a behavior pattern,—and such a selection is invariably made at the expense of competing inward forces. During this selective process integration is most important. There must be a unity, a harmony, or a least a peaceful relationship between the various drives that motivate daily performance. The adult who achieves an effective organization will move along on a fairly predictable, fairly well-defined course that to him appears logical, purposeful and justifiable. The least potent of the "defeated" impulses may be completely and permanently suppressed. The more powerful and persistent impulses that cannot find open expression in the plan of controlled action may find outlet through "substitute" or secondary behaviors that are more in harmony with accepted behavior. Indeed some psychologists have gone so far as to suggest that a major share of the energy and dynamism exhibited by civilized man derives from the numerous suppressions and inhibitions that convention places on cruder "natural" impulses.

Shaffer (46) summarized the experiences that tend to obstruct integration and to promote disruptive personality maladjustment within children. The school can by no means control many of the unfavorable experiences of out-of-school life, but teachers can and should be aware of these discordant influences and counteract them in some degree.

(1) Lack of orderly living. Irregular eating and sleeping, frequent fatigue, poor care of possessions, and disrespect for rights of other people are indicative symptoms of disordered daily life.

(2) Lack of guidance or constructive discipline. Absence of control or correc-

tion in the home can only in part be offset by proper management and guidance in the school.

(3) Too repressive discipline. Excessive regimentation and prohibition, either at home or school, can create many personality problems, all the more serious because of their general regressive nature.

(4) Vacillating or conflicting control. Discipline that is alternately strict and negligent tends to destroy all standards of conduct. The child does not know what reaction to expect from any circumstance or situation.

(5) Pulling and hauling. Some adults, both parents and teachers, cannot accept the fact that children react more slowly than adults. Quick shifts from one situation to another do not allow the child time for proper orientation and adjustment. Adult pushing and rushing can result in child confusion and doubt.

(6) Neurotic parents (and teachers). Children copy the bad as readily as the good. Subjected to inconsistent or irrational control they soon acquire all the mechanisms of maladjustment.

(7) Conflicting loyalties. Quarreling homes or strict home opposition to school, friends, or other out-of-home factors tend to promote split loyalties and resultant frustrations. Broken homes often compel the child to "take sides", and/or to lose confidence in parents. Coupled with high emotional strain, frequent neglect of discipline, and excessive protection these circumstances account for the high delinquency rate statistically associated with broken homes.

(8) Undue emotional activities. Any circumstance that tends to repress or inhibit the natural confidences of children is damaging. The child loses a source of advice and the benefit of emotional release. Over-excitement produces uncoordinated activity and personality instability.

Efforts to correlate personality traits with body type or physical conditions have not been generally successful. A definite relationship has been established between glandular activity and temperament, particularly in cases of deficiency or over-activity of certain glands, notably the thyroid. Suspected cases of endocine disorder should naturally be given immediate medical attention. Outside the endocrine area, the relationship of body type and personality is largely a matter of adjusted learning. Shaffer concludes that body type or conformation

> "may be an important secondary determiner of personality traits but it is probably not a primary one . . . Perhaps all that is of value in the theories of physical habitus is adequately summarized in the old humorous statement that a fat boy has to be good-natured because he can't fight and he can't run." (46, p. 342).

Perhaps the best accepted typing of personality is the introvert-extrovert classification of Jung. The introvert is characterized by a tendency toward shyness and shrinking from social contacts. He is sensitive to personal references and is prone to substitute phantasy for reality. His speech is mild, and his manner quiet and generally deliberate. His satisfaction seems to come from inner thought and fancies. The extrovert represents the opposite extreme. He seeks social contact and finds satisfaction in constant association with other people. His predominant interests are in external circumstances and he has a tendency toward boisterous unrestrained manner and speech. He thrives on overt activity and social approval. The perfect extrovert or introvert is rarely met; most people strive to be somewhere near the happy medium.

"Normal" personality may include wide variation of individual traits, and abnormalities are in large part deviations from standard or patterns of taste and behaviour evolved by the society in which one lives. The basic characteristics of sound personality growth are well summarized in *The Principles of Abnormal Psychology* by Maslow and Mittelmann. (47, p. 38-43). Their "manifestations of normality" are worth careful review:

1. Adequate Security Feelings.—Good rapport with society in general and with one's own group; a feeling of identification with it. One must have some feeling of being at home in the world and of being an accepted member of some social group, however restricted this group may be.

2. Adequate and Firmly Based Self-Esteem.—Self-esteem is a form of self-evaluation. It is obvious that one's self-esteem may be too high or too low, even in our society where a fairly strong personality is the ideal. In such a society a conviction of permanent inferiority with its accompanying lack of self-confidence is such a handicap, particularly in men, that it may be quite incapacitating. On the other hand, too high self-evaluation in a society like ours, with its clear convictions of superiority and its tendency to dominate, may occasion resentment, jealousy, and even revolt in other members of the group.

3. Adequately Free Expression of the Personality (Naturalness of Behavior, Spontaneity).—This is characterized by:

a. The ability to drop the psychological defenses when necessary or desirable, to "relax" psychologically, to allow oneself to be psychologically "vulnerable," to drop one's mask or front.

b The ability to express hostility or aggression freely when it is necessary or desirable.

c. The ability to smile and laugh freely and naturally.

d. Ideals of personality that are not too high or too alien to one's own capacities (self-acceptance, self-tolerance).

4. Adequate Self-Knowledge.—We are often ignorant of important aspects of our own personality. Whenever we reject an impulse because it is unendurable or unacceptable to our social selves, it may sometimes be repressed; that is, we may have no conscious knowledge of its existence. An adequate self-knowledge includes:

a. Adequate knowledge of one's own major motives, desires, goals, ambitions, inhibitions, compensations, defenses, inferiority feelings, etc.

b. Objective and realistic appraisal of one's own assets and liabilities. The ability to appraise oneself honestly is based upon the ability to accept oneself as natural, and not to repudiate any important desire or thought. This, of course, does not mean that there must be **no** socially or personally unacceptable desires; they will always be present as long as one lives in a society. What is important is that these thoughts and desires be accepted as part of oneself, as common to human beings, as "natural." They must not be projected into the outside world, nor must one be afraid of them, for with such fears go repression and trouble.

5. Adequate and Efficient Contact With and Use of Reality.—Reality here means more than the physical world. It has at least three aspects with which the psychologist must be concerned: the physical world, the social world, and the internal world. One must be able to gauge all of these objectively and realistically, for as soon as he distorts or evades them he becomes less efficient—less able to adjust to them and to adjust them to himself. Such use of reality involves:

a. An absence of excessive fantasy, daydreaming, escape, or flight.

b. A realistic and broad outlook on the world which is able to withstand all the ordinary shocks of life. A person who has not been too much sheltered from life but has had contact with a fair sample of the world, good and bad, is able to see and face the shocking and the terrible when necessary. A broad knowledge of the real world is an insurance against traumata or shocks. It is, of course, possible for a sheltered, over-protected personality to remain normal as long as his false and naive idea of the world is not upset. In our society, however, such an idyllic state of affairs cannot last very long.

c. Good social equipment and social intelligence.

d. Adequate self-knowledge (see 4 above).

e. Adaptability, or the ability to change easily and gracefully if external circumstances or reality cannot be modified. A good phrase for this is "co-operation with the inevitable." This trait is also related to frustratability and frustration tolerance, the ability to withstand deprivations without suffering undue harm psychologically.

6. Adequate Emotionality.—This is characterized by:

a. Lack of emotional frigidity and of fear of emotions. This involves the ability to form strong and lasting emotional ties such as friendships or relationships of love and trust. The individual has the ability to fall in love and to be loved; he does not control his emotions excessively; his hostility can be given adequate expression. However, there must be a certain degree of emotional control.

b. Sympathy in a broad as well as a narrow sense, that is, the ability to understand and share other people's emotions.

c. At least some degree of happiness and pleasure in life; the ability to enjoy oneself, to have fun, to laugh. Everyone is unhappy at times; but this unhappiness must have valid reasons which are justified by the group.

7. Adequate Integration and Consistency of Personality.—The personality is an organized whole; all its aspects overlap each other and have definite relationships with each other. In the maladjusted person this organization breaks up; instead of acting together, the various parts of the personality almost seem to be warring against each other. The personality may be unstable and shift about continually. Certain aspects of it may be entirely repudiated and repressed; this creates much indirect disturbance. The following are fundamental for a well-integrated personality:

a No major conflicting or mutually, incompatible trends within the personality.

b. No serious dissociation of personality, as in multiple personality.

c. Cultural folkways which are easily enough met so that they can be accepted without internal conflict.

d. Morals and conscience which are not too flexible nor rigorous from the group's point of view.

e Fairly rounded development, versatility, several interests instead of just one, and no single ability or interest over-emphasized.

f. Average continuity or consistency in time of the major personality trends.

g. Ability to concentrate, to keep a set, to fix attention.

8. Adequate Life Goals, Purposes, Ambitions.—This involves:

a. Achievable, realistic goals.

b. Reasonable persistence both of goals and of efforts to achieve them.

c. Goals which are not incompatible or inconsistent.

d. Goals which involve some good to society. They must not be too egocentric or selfish.

9. Ability to Satisfy the Social Requirements of the Group: Adequate Inhibitions and Social Adaptability.—The individuals must be:

a. Not too unlike the other members of his group in ways that the group considers important.

b. Able to face the ordinary problems of life with a fair degree of confidence and success.

c. Adequately informed on the folkways of his group.

d. Willing and able to inhibit the drives and desires tabooed by his group.

e. Able to meet the fundamental personality demands of his society without too great difficulty; e.g., he must manifest activity, ambition, competitiveness, promptness, friendliness, democratic behavior, sense of responsibility, loyalty, patriotism, etc.

f. Interested in the games, sports, hobbies, interests, etc., favored by his group.

g. Willing to accept—at least to some extent—the group's set of folkways, or at least **some** set of folkways. He must feel that some things are good, others bad; some right, others wrong. In a word, he must not express universal cynicism.

10. Adequate Emancipation from the Group or Culture.—This involves:

a. At least some originality, individuality, and differentiation from other members of the group.

b. Some independence of group opinions; the ability to make up one's own mind on some matters.

c. The absence of an excessive need for flattery, reassurance, or group approval. The individual has within himself adequate reserves of self-respect and self-esteem.

d. Some degree of tolerance, cosmopolitanism, and appreciation of cultural differences.

e. Adequate spontaneity (see 3 above).

11. Ability to Accept Love, Affection and Support.—One aspect of normality is the ability to receive attention, love, affection, and even mothering, as well as the ability and desire to be dependent, filial, and even at times submissive. We might even say that one characteristic of a normal person is his ability to place himself temporarily in a dependent, subordinate, or even submissive position without experiencing feelings of guilt or hostility toward the one upon whom he is dependent, or any loss of self-esteem or ego-security. Men who are over-ambitious or excessively independent unconsciously seek mothering from their wives or friends rather than partnership; but at the same time they react intensely against this desire for mothering. The ability to accept love involves:

a. Some satisfaction of the need for dependency.

b. Some feeling of being loved by superiors or by those who are looked up to.

c. Some pliability and suggestibility, some susceptibility to the desires of others.

d. Ability to admit superiority or merit or ability in others; not too strong a will to power.

12. Adequate Bodily Desires and the Ability to Gratify them.—This includes:

a. A healthy attitude toward bodily functions in terms of accepting them but not being preoccupied with them.

b. Ability to derive pleasure from the physical things in life such as eating, sleeping; having good fatigue recovery.

c. Ability to perform the excretory functions adequately without shame or conflict.

d. Sexual adequacy.

e. Ability to work.

f. Absence of an excessive need to indulge in any of these activities; and the ability to stand, at least temporarily a fair amount of deprivation.

WHAT WE KNOW ABOUT THE LEARNING PROCESS

1. **The Nature and Conditions of Learning.** Learning is one of the complicated continuous phases of living. We appear to learn in some degree from birth to death. Psychologists have not yet wholly agreed upon what constitutes learning, nor upon the process whereby it is accomplished. Research, experimentation and observation have given us some idea of the apparent learning course. First, each person recognizes certain individual wants or needs. At any given time these urgent wants constitute for him desirable goals for attainment. Second, he recognizes with varying degrees of comprehension, factors and circumstances that can contribute toward the desired outcomes. Third, he accordingly initiates whatever action may appear most appropriate to him to attain the ends in view. Fourth, he continues the activity, generally with modifications until some degree of satisfaction is reached. Some psychologists insist that the recognition of appropriate effective action is the crucial element in learning. Others maintain that the satisfying activity itself is the crucial element. Still others refer to the modification of the activity as the keystone in genuine learning. The practical teacher may be inclined to ask. Is one phase more important than another? Do not learning situations normally require all three, revealing insight, initiatory activity and subsequent modification?

Without subscribing finally to any one of the varying definitions of learning, we can find certain principles or conditions that tend to characterize learning under normal circumstances.

(1) Learning is limited by the degree of maturation of the learner. The period of childhood is one of remarkable growth and of great increase in the learning rate. So closely are the two related that in infancy it is difficult to distinguish between them. The emergence of motor skills and physical behavior tend to follow a fairly rigid schedule in early childhood. Experimentation indicates that most learnings such as walking and talking are accomplished only when a minimum "threshold age" is attained. Practice prior to the "threshold age" will be relatively ineffective and gains in performance will be largely temporary.

(2) Learning is dependent upon adequate motivation. The desire to learn may arise from one or more of a variety of sources. The principal motivating influence for school learnings are physical needs, habits, social approval, desire for recognition, wholesome attitudes and ideals. In many instances the undertaking of a task or the challenge of a problem will set up a motivation which will carry along until some degree of either accomplishment or frustration has been encountered. The advantage of an intense desire to learn will do much to insure a near-maximum use of native capacities. A strong motivation can often times partially compensate for disabilities, handicaps and other deficiencies.

(3) Learning is seldom complete. Goals are seldom translated into full reality, and the normal human appetite for improvement is never entirely gratified. One satisfaction sets up another want; each attainment reveals a subsequent deficiency. The very act of accomplishment fosters further desires. So throughout life the process of learning, adjusting and modifying, acting and reacting goes on, sometimes rapidly, sometimes slowly, never ceasing and never quite reaching full realization.

(4) Learning is marked by a **resultant** modification of human behavior. The change may be in direct physical activity, or it may represent a less obvious intellectual or emotional adjustment which will indirectly influence physical behavior. In any case some modification takes place. We

feel differently, we think differently, we act differently because we have learned. Public education has concerned itself as much, perhaps even more, with the overt behaviors as with the less tangible areas of ideals and attitudes. Laudable as social modification may be, the school must not lose sight of the fact that such changes are resultant rather than causal. The improvement of the overt behavior pattern must be preceded by an inward change of a parallel nature. This inward transformation, in both its quantitative and qualitative aspects, is identified with effective learning. Many a teacher has mistaken that outward manifestation for the inward virtue. Human nature being what it is, observed behavior is not necessarily a sound interpretation of the aims, emotions, conflicts and understandings which are all important to the learner. Practicing multiplication does not guarantee that Johnny is learning only arithmetic.

(5) Learning is influenced by all phases of living. Only in theory does the pattern of life fall clearly into the physical, the mental, the social, and the emotional, (or whatever other classifications we may choose). In real life the child feels, acts, and learns as one organism. The complexity of learning is difficult to analyse but we do know that school accomplishment is related to such factors as physical health and social status. Vitamin deficiencies do affect report cards and parental speech habits influence language scores. The school must not delude itself into believing that intellectual and moral advancement goes on independent of physical comfort, family security, economic necessity, racial extraction and religious persuasion. All phases of living have a bearing on the actual learning experience. The optimum learning experience absorbs the energy and the attention, draws upon the background of experience, and precludes all other interests during the time it is effectively under way.

(6) Learning involves a re-creation and re-organization of past experience. Learning proceeds from the known to the unknown. New concepts and new abilities require the foundation of previous learnings. The infant walks when he has mastered some degree of balance and of muscular control. The linguist utilizes those basic similarities that facilitate vocabulary growth. The child with the rich experiential background grasps the new concept more readily since he has the "building blocks" of previous contacts to assist in the formulation of new mental imagery. This re-organization of elements from past experiences tends to explain the stability, or uniformity noticeable in the mental processes of each individual. The rogue, the minister, and the adolescent school boy each has certain characteristics or patterns common to all his intellectual activities. These are in large measure legacies from experiences and situations already encountered. The so-called trial-and-error activity that frequently marks the initiation of the new learning is not truly an undirected experimentation. Rather it is an approximation-and-refinement, moving from the cruder pattern to the more direct, more effective, and more defensible behavior. True trial-and-error would allow unrelated or even contradictory effort and movements. Instead the mental processes of each person, even in the earliest attempts at new learning, are marked by an approach in harmony with previous viewpoints.

(7) Learning is dependent upon meaning. Nonsense syllables are memorized much less readily than are recognized words of equal length. Ten isolated words are memorized less readily than a ten-word sentence. Illustrations become valuable teaching aids when they clarify relationships and enrich meaning. Meaning begins with sensory perception, derived from actual objects or particular experiences and expressed through words. Words in turn combine to form sentences which have a meaning beyond that of the individual words alone. Many concepts and ideas grow and expand in

meaning over a period of time. As new items are added the total concept may undergo change. Just as the insertion of a comma may change the meaning of a quotation so the integration of one new item may modify the pattern of previous conceptual understandings.

2. **Theories of Learning.** Teachers are interested in the theories of learning primarily because the great majority of behavior patterns among pupils are the direct result of learning. Consequently if the school is interested in the conduct of its scholars it must be interested in the ways and means whereby that conduct is acquired. Teachers, on the other hand, are not necessarily interested in theories of learning as systematic entireties, nor in the controversial issues between theories, nor in the perplexing terminology developed by the proponents of various "systems." The teacher may normally request information as to what theories are most seriously accepted, what are the salient features of each, what educational implications are derived from each, and most of all, in what ways are they complementary and what are the common areas of agreement among these theories.

There are three viewpoints in the psychology of learning that might today be considered active and influential in education: connectionism, conditioning and the field theory. Each of these three "schools" has attracted outstanding proponents and each has revealed and emphasized worthwhile information on the complex learning process. The present treatment must of necessity be little more than a brief survey. For interested teachers explicit literature is available on each theory, as well as authoritative summaries in very readable form. The best of such reviews is found in Part II of the Forty-first Yearbook of the National Society for the Study of Education, *The Psychology of Learning, 1942.* The present survey leans heavily upon this source, and it may be considered required reading for anyone exploring further into the theories of learning.

(1) **Connectionism**

Connectionism as a popular theory of learning has developed largely through the efforts of Dr. E. L. Thorndike. It has attracted support from many eminent scholars and in consequence is found with many modifications and many variations of emphasis. The point of view of many connectionists has been altered in degree by the discoveries and arguments of other theorists. Any clear cut unchallenged authoritative definition is difficult to find. However, in the main, the presentation of this bulletin accepts the position supported by Dr. Gates in the Forty-first Yearbook to which reference has been made.

Connectionism has been defined as "the doctrine that all mental processes consist of the functioning of native and acquired connections between situations and responses" (28, p. 97). It has been known by a variety of names, the Bond theory, the Stimulus-Response or S-R Bond theory being the common ones. In brief, it states that each situation confronting the learner serves as a stimulus which in turn elicits from him the response or reaction which he feels most appropriate. The adequacy of the response is determined largely by the consequences which follow. Between the stimulus and the response a connection is established, the strength and permanency of which is influenced by the consequences of the response. When confronted by the same or a similar situation the connection already established functions to bring forth the same or a similar response. If the previous response has been unsatisfactory or inadequate in some sense, the learner searches for a new response to connect with the stimulus so received,

The importance of the physiological structure of the nervous system was originally accepted in early connectionism. This is no longer true and

present exponents deny that neural theory is an essential phase of connectionism. Gates explains the modern view emphatically:

> "The term **connection,** bond or tendency, does not refer to any neurological concept or agent at all. It refers to a functional relation between a situation and a response. It refers to an observed phenomenon and implies no neurological correlate. It implies nothing except that there is an observed tendency for a situation to be followed by a response. As Thorndike himself describes it, 'That a connection S_1-R_1 exists in a certain organism means . . . simply that there is a probability greater than infintesimal that if S_1 occurs, R_1 will occur.' A stimulus-response psychology could be written without any reference to the nervous system whatever. While Thorndike, Woodworth, and others have attempted to translate their psychology into the neural theories prevailing at various times, their success in doing so is of no importance to the basal scheme. Stimulus-response is a psychological, not a neurological theory." (28, p. 145-6).

Connectionists were responsible for the first statement of the so-called "Laws of Learning." The resulting over-emphasis and misinterpretation failed to note that these "laws" were in large measure actually handy generalizations of observed behavior rather than basic directive principles. As a result the original "laws of learning" have been largely discarded. The concern originally expressed through the "laws of learning" is still maintained through an increasingly significant role assigned to the learner himself, "the organism" as Dr. Gates labels him. Within the individual the connectionist notes two qualities or conditions that are of first importance to learning, the "set" or "readiness to act", and the "effect" or "degree of satisfaction" derived through the response. The condition of "readiness to act" is determined by

> "the characteristics of the organism, its structure, its chemical and emotional state, its hungers and thirst ,its 'drives,' its 'likes and dislikes,' its 'activities-under-way,' its 'goal-direction,' its temporary sets and adjustments, it states of fatigue and other bodily conditions, its attitudes, interests ,goals, and purposes." (28, p. 146).

The nature of the behavior resulting from any given stimulus will be determined by the sum total of these inclinations and characteristics. The degree of satisfaction experienced by the individual determines whether the responsive behavior shall be continued, modified or abandoned.

> "The decisive role of the organism itself is indicated by the prominent place which the "law of effect" has always played in Thorndike's accounts of learning. The 'effect' of a response on the organism, whether it produces 'satisfyingness' or 'annoyingness,' whether it furthers or retards progress toward the goal, is the most important matter in the learning situation. . . . The strengthening effect of a successful outcome may be shown by (a) immediate repetition of the successful response, if the situation remains present, or (b) a greater probability that the response will appear the next time the situation is encountered." (28, p. 147-8).

The connectionist theory has also been responsible for the concept of "trial-and-error" in learning. Opponents have attacked the idea as mechanistic and undirected. Actually the term "trial-and-error" is intended as a description of the observed behavior rather than as an explanation of the learning process. Responses are rejected, new ones are attempted and changes introduced in light of new elements within the stimulating situation. Another accusation against the connectionist school is that of an over-

emphasis upon drill. Gates explains that "practice, drill, experience, and reaction are necessary for learning, but they alone do not guarantee it, much less explain it" (28, p. 159). With the decreasing importance of the "learning laws" the prestige of "frequency" in the connectionist theory is probably diminishing.

(2) **Conditioning**

The conditioning theory is deeply indebted to two early independent psychological experimenters. Pavlov found that the sight of food caused the salivary glands of a hungry dog to function profusely. This native relationship was called a reflex. Next a light or a buzzer was operated immediately before the food was presented. Soon it was possible to induce salivation by a light or buzzer alone. This acquired relationship was the "conditioned reflex." John Watson used the same basic principle in developing "Behaviorism" as a theory of learning. He found a child was naturally frightened by a loud sound, but was not afraid of a rabbit, or similar furry object. By repeated simultaneous presentation of a rabbit and loud sound the child "learned" to cry when the rabbit was presented alone. Much of Watson's subsequent theorizing has little support, but the principle of control of behavior through conscious association of stimuli is still widely accepted. Refined, expanded and documented, it remains a fundamental part of the conditioning theory.

Generally, conditioning accepts physical behavior as the basic expression of learning. This behavior is primarily muscular movement, which can be measured, observed and described. Muscular response or behavior is elicited through some stimulation of the primary receptor senses of the body. Conditioning insists that when any stimulation occurs a second time the same physical response will again occur unless blocked or inhibited in some definite manner. Learning then consists of an association or relationship between behavior or activity (the response) and the condition or circumstances (the stimulus) that prompted such action. What goes on within the learner during the establishment of such association is of minor concern. Learning is described in terms of observable, and presumably controllable, factors. The inner intangibles of mind or thought are beyond observation and are omitted from immediate consideration. Conditioning contends that we learn **whatever we do,** whether it be good or bad, right or wrong. The very experience of performing an act gives it priority or preference when the same stimulus is repeated. Once established, a wrong response will continue until for some reason a new association can be made between the originating stimulus and a more acceptable activity. Teaching consists of deciding what behavior pattern is desirable or appropriate, and then providing the stimulus that will evoke that behavior in the learner. Unless some specific interference takes place the recurrence of the stimulus will cause the recurrence of the appropriate response.

Conditioning has some rather interesting educational implications. The stimulus is normally within a complex situation. At any given moment a student is normally subjected to a variety of stimuli, the teacher's voice, the writing on the blackboard, the music in the adjoining room, the giggle of a schoolmate, the prod of the boy in the next desk, and many other sensory perceptions. Actually attention is centered primarily on one, although others may be included as secondary or complementary. The important thing is how he will respond to these stimuli. Sub-vocally, he may be reading the written words, or repeating the ditty for the melody he hears, or plotting revenge for the recess period. Whatever he is doing he is learning. Learning by doing is the primary tenet of conditioning. The crucial classroom con-

siderations are that the stimulus be clearly and accurately identified and that the response be accurately observed and evaluated.

New behavior or new responses are the result of new combinations of stimuli. In the first instance the essential stimulus was accompanied by many supporting secondary stimuli. In the second situation the original essential stimulus may be weakened or gone but the supporting stimuli have been associated with the response and are themselves sufficient to call forth the desired response. The change of signals or stimuli necessary to call forth behavior or response is the essence of learning. The combinations of stimuli are limitless and possibilities of substitute cues make learning complex. By gradual substitution even the general situation may be completely altered.

Responses may be inhibited or forgotten. Signals may fail to elicit their previous responses. Situations may present two cues which separately brought forth opposing responses. Presented together one must be inhibited and its effectiveness lessened or lost. A cue may be overworked until fatigue reduces its effectiveness. Sometimes a cue may be so faintly presented as to fail to arouse the previous response. Every failure tends to dissociate stimulus and response, and used repeatedly may completely destroy the initial association. Forgetting is explained in terms similar to response inhibitions. Forgetting is associated with the lapse of time, but may not be due to the time element alone. The association which is "forgotten" has been lost because the respective stimuli have somehow over the period been linked with activities other than the original response.

Most people can recall "memories" which were established through a single association upon some occasion. The conditioning theory explains that full association strength is established at the first pairing of the stimulus and response. Practice is necessary only because the correct response must be secured from a variety of situations, all of which may contain the dominant stimulus, but none of which are identical. The secondary or complementary stimuli vary from situation to situation, and practice tends to cover a wider range of possible combinations. Effective practice can be carried on only when the dominant stimulus is clear and when the general situation resembles the environment under which future performance may be desired.

Motivation or the desire to act is related primarily to physiological drives or needs. The bodily changes in glandular balance, blood pressure, sugar content and similar fluctuations are closely related to excitement or emotional tensions. Through them responses are activated and satisfactions attained. Once established the association tends to be permanent and a habit is formed Habits in turn tend to be self-conserving since any interference is disturbing. Strong habits or compulsions show high motivation, not because they are new and interesting but because interference requires a complete re-shifting of stimuli associations. Motivating devices such as reward and punishment are effective only when they can substitute new behavior for the old stimuli or when they can remove the peculiar combination of stimuli that resulted in the undesirable behavior.

(3) **The Field Theory:**

The field theory, like most other explanations of learning, has variations in interpretation, and many of its most prominent proponents do not see alike on all details. Many names have been applied to the variations: field theory, organismic psychology, dynamic psychology, Gestalt psychology and configurationism. Of these, the field theory is perhaps most widely accepted and most indicative of the basic concept involved. Originating in

Europe, notably in Germany, this new viewpoint gained a foothold in America about 1925 and rapidly became popular and influential in educational circles. Its many direct implications in educational methods have received enthusiastic support from large numbers of classroom teachers.

The field theory, in brief, insists that "all events in nature—and this statement plainly includes educational phenomena (learning)—always occur within some field, big or little, whose properties and structure explain the localized occurrence that it embraces and simultaneously permit increased control over it," (28, p. 166). This "field" may be interpreted to mean the entire frame of reference, physical, social, psychological, within which any event—in our case learning—takes place. The learning is influenced and controlled not by any single or serial stimulus, but rather by the sum total of all factors, immediate and remote, direct and indirect, which have relationship to it. The field may be narrow and limited, or as Lewin suggests, it may be a "situation covering hours or years seen under certain circumstances as a unit." (28, p. 218). In every case an interpendence exists which serves to create a unity of influence acting upon the learning. Learning then becomes a conscious response and adaptation arising from the interaction of the person and the total environment within which he moves. The field or environment functions as a unit and the learner interprets its relationship to him. Learner and "field" become the essential components out of which the dynamic activity or the change which we call learning emerges.

The field theory makes several emphases which should be noted and appreciated. It first emphasizes the structural nature of every situation. The interpretation the learner makes of the structural field determines in large part the meaning the situation has for him, and the learning in turn is a direct function of meaning. This emphasis upon structure or configuration of the environment leads Hartmann to remark, "No two items, no matter how far apart they may seem to be, should be learned without asking what is the nature of the relation between them." (28, p. 205). Practical classroom teachers may question the efficiency of such "asking" particularly so when Hartmann acknowledges immediately that all relationships may not be fruitful. The insistence of the field theorists upon the integration of all the elements of a situation into a functional unit has been in sharp contrast to the traditional viewpoint of the connectionists whose faith once rested largely upon isolation of the various elements. The long standing issue was whether a response was promoted by a separate distinguishable stimulus or whether it arose from a complete comprehensive pattern of events. The position of Gates that such a pattern of events can be regarded as a single stimulus represents a sound compromise in modern thinking.

Another point of friction has arisen over the relative importance of the present and past situations. The field theorists have insisted that the present pattern or structure is the major determinant of the forthcoming response. Other schools place greater emphasis upon past experience in influencing and determining what the forthcoming responses shall be.

The field theorists have laid great stress upon the importance of individual likes and dislikes in all learning situations. The name "organismic psychology" comes directly from the primacy accorded the role of the individual in the determination of the behavioral pattern. No modern theories have, of course, denied the influence of individual choice nor have they disregarded the physical and emotional factors in determining such choice. It has, however, remained for the organismic school to champion the preeminence of individual goals in the learning processes. Present attention to the operation and importance of drives, needs, interest and motives is

due recognition of the effective work the field theorists have done in accenting "the whole child." The three components of the learning process—the situation, the organism and the response—have been accepted by all modern psychologists. But where connectionism and conditioning emphasize the situation and the response perhaps at the expense of the organism, the Gestalt school accentuates the situation and the organism in a dual relationship.

A further emphasis developed by the field theorists has been what they call "the big whole". This stress is applied to the learning situation and the learning material alike. Applied to the situation it becomes the structured or patterned quality to which reference has already been made. Applied to the learning material it relates closely to meaning and understanding. The overview or survey necessary to clarify meaning and promote understanding becomes an essential introductory activity within the learning process. Within the learning process itself integration or recognition of units and wholes precedes differentiation or recognition of parts and elements. Initial learning is the recognition of the "crude massive whole" which is gradually refined to include "a pronounced articulation among its many parts." The major whole remains, however, as a unit and will take its place as a part within a still greater whole.

Finally, the field theory accepts the crux of problem solving to be the achievement of "insight" into the essential relationships of the factors presented by the problem. The question of insight has been one of the most controversial ideas raised by the field theorists. Hartmann explains it as

> "a word derived from common speech and modified slightly in meaning to fit the needs of technical psychological discourse. In its simplest form it connotes **appropriate** behavior in the presence of any life-situation; e.g. the baby who uses a spoon to bring the food to its mouth for the first time has a fitting **concept** about the relation of certain tools, distances and objects to parts of his own body as his adaptive behavior plainly indicates. Insight thus does not refer exclusively to high-level or intricate conduct. . . . Insight is really a kind of sight, i.e. a mode of perception. It is, like all psychological processes a special kind of neural or cortical organization that is established as soon as the organism achieves its purposes, i.e., it is the internally apprehended correlate of the 'closing' of an incomplete configuration whose very incompleteness has produced the 'problem' initially by keeping the learner in a state of tension." (28, p. 191-2).

All of which means that insight constitutes a recognition of the proper procedure leading to a satisfactory solution. Insight may be achieved in varying degrees and stages. It may come slowly or in partial degree and may be accompanied by exploration activities. In some instances it comes instantaneously and with complete clarity. Opponents contend that it is more closely associated with "hindsight" than "foresight" and that the exploratory activities constitute the "trial- and -error" basic to the connectionistic theory. Actually the necessary recognition is generally achieved only after some consideration and effort and appropriate, plausible exploration. It is the result of neither chance manoeuvre nor mystic revelation. It frequently follows some directed activity based on feasible hypothesis. Its appearance, whether stumbling or saltatory, does mark the climax of the problem solving process.

The field theory, as previously noted, has contributed mightly toward modern viewpoints in education. No claim to perfection can be made; many areas are yet in controversy and doubt. Hartmann has reviewed the educa-

tional implication concisely and simply in the Forty-first Yearbook. His review (28, p. 206-8) is well worth close scrutiny and study by interested teachers.

Common Ground:

Many of the issues raised by the various theories of learning have been the subject of sharp controversy. Psychologists have been in the center of the fray and their laboratories have been their proving grounds. Much of the research has been undertaken in an effort to verify a hypothesis or to defend some statement under attack. Opposing schools of thought have been careful to avoid any hint of eclecticism, presumably on grounds of incompatibility or inconsistency. Classroom teachers, whose task is essentially to make some functional application of psychological theorizing and experimentation, have often been slightly dismayed and bewildered by the verbose arguments and technical counter-charges. In consequence, they have been forced to the pragmatic stand of supporting and practicing those methods that experience indicates as most successful without being unduly concerned over their psychological derivation. It is heartening to teachers to read such an authority as Dr. T. R. McConnell suggesting that "these specialized terminologies often conceal rather striking examples of consistency in underlying observation, and descriptions of learning behavior." (28, p. 243) and that "although certain phases of the learning process have different **systematic** significance from one theory to another, they point to approximately the same **practical** consequences" (28, p. 256). The unity of these consistencies and practical consequences could be more readily discerned if psychologists made an effort to reveal as fully as possible areas of agreement. It may be argued that the function of the true psychologist is to explore as many fields and to follow as many new leads as possible since without intuition, hypothesis and investigation knowledge would tend to stagnate. If so, then one function of the educational psychologist will surely be to clarify the issues, to equate the terminologies, to delineate the common ground, and to isolate the actual divergencies and points of conflict. This is the purpose of the exceptionally fine chapter by Dr. McConnell to which reference has already been made. The task would be simplified if some uniformity, particularly in the experimental evidence, could be achieved. Appraisal of much of the experimental data is most difficult since the laboratory work is seldom undertaken for the purpose of comparison or confirmation. Proponents of each theory decide independently upon the nature and the execution of their respective tests and experiments and largely disregard evidence from other theorists. Variations in the difficulty of the task, in the nature of the learning involved, in the acceptable criterion of successful learning, in the age and maturity of the learners add to the confusion of much conflicting data. The interpretation of statistical and empirical evidence is often biased, emphasizing one result, one phase or one outcome to the total neglect of other portions of evidence that may have valid significance.

The points of congruity outlined by Dr. McConnell under the title "Reconciliation of Learning Theories" are so well taken that they are summarized here, along with two additional items to which Dr. McConnell makes only passing reference.

(1) The entire learning process is highly complex, and involves the arrangement of material to be learned into some pattern or design that is meaningful to the learner.

(2) Learning must be explained in terms of relationship between events (including physical and mental activities) rather than in terms of independent, isolated phenomena.

(3) Motivation, or the desire to learn, is essential for every successful learning situation.

(4) Good motivation includes setting up some goal, and learning consists of regulating and directing one's behavior in a manner that will enable one to achieve that goal.

(5) Most learning includes some intermediate activity, intellectual or physical or both, between the initiation of a purpose and the acquisition of the goal. This intermediate action might better be called "approximation-and-correction" rather than "trial-and-error".

(6) Any learned response may be modified according to the consequences that follow it.

(7) For economy of time and effort practice must involve more than mere repetition and monotonous drill.

(8) Learning is essentially complete when fundamental relationships are clearly perceived and fundamental principles involved are mastered.

(9) Transfer of training is roughly proportional to the degree in which situations are similar in structure and in meaning.

(10) The ability to recognize differences (discrimination) is as important in the learning process as the ability to recognize similarities (generalization).

(11) The learning process is a function of "the whole child,,' and, as such, is influenced by physical, social, and emotional as well as intellectual factors.

Evidence concerning the learning process has accumulated from thousands of studies, involving in varying ways, infants, older children, adults and in many cases animals. In attempting to evaluate and generalize from such evidence certain fundamental considerations must be kept constantly in mind. The first has to do with neuromuscular maturity. Growth of the muscular system is probably of lesser importance to learning than is the growth and sensitivity of the nerve network and the brain center. The second consideration is the variability in motive or incentive. Not only do individuals differ widely but marked changes are apparent between age groups. The older child grows more critical and develops interests which tend to resist modification. The third factor is the influence of experience. Observation, prejudices, reminiscence and memory are all related to and enriched by experience. For the practical teacher the two last factors are more vital. Normal health and proper grade placement of materials will meet the problem of maturation. Teacher resourcefulness and an enriched curriculum can do much to provide the incentives and experience which all theories of learning value and defend.

MEMORY

Perhaps the most thoroughly rejected idea in education is the supposition that the rote memorization of factual information constitutes an education. No reputable teacher today is satisfied with a definition of education that calls for no more than routine recall of factual information previously presented by a book, the teacher or some other source. In rejecting such fallacious limitations, there is, however, some danger that the importance of memory and its legitimate function in the educative process may be overlooked. That memory, with its powers of association, recall and recognition, is one of the foundations of genuine education seems obvious. Practically every field of school study requires extensive memorization as a means toward proficiency. Yet, it is not uncommon in educational circles today to find our theorists disparaging and our practitioners neglecting the established findings of experimentation in this important field.

For the purpose of this section it is necessory to define rather closely the connotations here attached to the term memory. In some instances the term has been used as loosely synonymous with learning. It is used here in a much narrower and confining sense.

Our normal human capacity fosters the development of numerous mental images arising from previous experiences of various kinds. These mental images in turn become integral components of the thought processes whereby associative relationships are established. These associative relationships are of primary concern to all learning processes. They result in modifications, adjustments and creations. They involve imagery, verbalization, symbolism, perception and stimuli of every type. Some psychologist are inclined to view learning as the establishment of strong associative relationships. Others take the contrary view and call learning the alteration of associative relationships. No matter which view of learning is supported the retention or recall of certain of these associative relationships is important. This power of retention constitutes memory.

(1) **Recognition and Recall:** Experimental studies in memorization have developed two criteria, recognition and recall. Recognition depends upon the identification of previous experiences and associations, perceptual or otherwise, occasioned by the re-presentation of the original stimulus. Recall on the other hand, requires the renewal of an earlier association without the benefit of concurrent re-presentation of stimulus. Of the two, recognition is undoubtedly the easier. Recognition may vary in degree from only a vague sense of familiarity to positive indentification. Recognition may be established by a variety of media, by faces, by names, by color, by sound or other means. Recall seems to require verbal or written expression. Recognition frequently requires the identification of key features while recall requires complete and accurate reconstruction. Controlled studies have proven that fewer repetitions are necessary to establish a "threshold of recognition" than to reach a "threshold of recall". When retention is tested by both means the score for recognition even after adjustment for guessing, shows a definite advantage over the score for recall.

Recognition and recall are used extensively in our schools. The so-called objective test makes extensive use of both. Previous examination techniques depended almost wholly on recall. It seems apparent that both are the expression of the same power of retention and that the factors that contribute to one also contribute to the other. In experimental studies the recall technique is more often used since the scoring can be sharper and since recall tests are more easily devised. Considerable empirical data has

been gathered concerning the influence of the various factors that appear to be most revelant to the memorization and retention of factual material.

(2) **Overlearning and Drill:** The criterion as to what properly constitutes memorization of material is purely arbitrary. Generally, one correct recall without benefit of prompting of any kind is accepted as satisfactory evidence that the material is memorized. Any practice beyond the point necessary to reach such a criterion constitutes overlearning. Much of the repetitive practice incorporated into the drill and review periods in classrooms is chiefly overlearning.

Just what is the relationship of overlearning to retention? The question is of practical significance to the classroom teacher. The problem of learning to spell is illustrative. Every member of the class probably knows a varying number of words in the list before the lesson begins. How can such words be segregated, particularly in a large class? The amount of practice required to establish correct spelling of any given word will vary with individual members. What control then should the teacher attempt to exercise over the spelling practice? Very frequently the spelling list may contain one word or more which the entire class can spell correctly. Is there any point to the additional practice rendered by retaining those words in the list? The spelling difficulty of a given word may lie only in one syllable or in a particular letter combination. Is the practice ordinarily spent on the remainder of the word largely a waste of time? Frequently, reviews of previous spelling lists may be primarily over-learning practice. The once common penalty of "writing out mistakes fifty times" involves some understanding or lack thereof in the efficacy of overlearning and drill.

For evidence concerning the value of overlearning certain experimental data is available. The investigations by Krueger (1) are accepted as authoritative in the field. A review of statistical data is unnecessary here. It would support such generalizations as the following:

(a) Overlearning does increase the retention of memorized materials.

(b) The proportional advantage of overlearning diminishes rapidly beyond a rather modest point. Extra practice beyond one-half the number required for original memorization adds relatively little retention. Long repetitive drill periods would appear to represent poor time economy.

(c) The longer the interval between overlearning and recall the greater the benefit derived from overlearning.

(d) The results of overlearning are improved when practice is spaced rather than massed at one time. The intervals between practice periods should be short at first and should rapidly lengthen.

(e) The benefits of overlearning depend upon a high degree of concentration during the recitation practice periods.

Teachers should realize that repetitive drill beyond a rather limited point is of doubtful educational value. "Practice makes perfect" finds little support in education. The penmanship of adults seldom improves with extensive use, not because the ability to improve is lacking, but rather because the desire and conscious effort to improve has been replaced by other purposes. Unless the pupil can maintain some genuine interest in improvement little is to be gained by further repetition and practice. Drill can be effective under these special conditions:

(a) The pupil accepts the need for improvement.

(b) The practice is animated.

(c) The pupil can see the resulting improvement.

(d) The practice avoids materials already well learned.

(e) The practice periods are relatively short.

(3) **Nature of the Materials:**

The ease of memorization and the degree of retention varies to some degree with the nature of the material to be memorized. Various experimental studies have substantiated the following observations:

Meaning: Nonsense syllables are often used as experimental material since they tend to remove any advantage of previous contact or special significance. Studies contrasting the ease of memorization and the tenacity of retention as between nonsense syllables and meaningful words all favor the meaningful material by a wide margin. This advantage prevails both in ease of learning and degree of retention. The more meaningful the material the more readily is it learned and the longer remembered. Actually one might say that material rich in associative relationships is already partially learned. Isolated meaningful words are learned less readily than similar words arranged into a logical sentence. In the latter case the concepts to be remembered have been materially reduced.

The significance of experiments with meaningful material should not be lost in the practical classroom. Not infrequently a substantial share of the material presented to a class is meaningless or at least weak in associative connotation to a number of the students. To require memorization or retention under such circumstances not only sacrifices the purpose of education but disregards the common principles of effective learning. Pupils' experiences should be widened and learning materials interpreted in terms of previous concepts and understandings. Perhaps nowhere in our school practice is the meaningfulness of materials more often violated than in primary number work. Teachers are so often found rushing into symbolic abstractions and computations without first building a foundation pattern of numerical concepts through multiple experiences. Historical dates, geographical names, places, spelling of unknown words, uncomprehended poetry are all classroom learnings that sometimes represent little more than nonsense syllables to the young learner.

Length: There is no clear-cut position respecting the relation between length of materials and the facility of memorization. The considerable experimentation on the topic undoubtedly indicates that the increase in effort and time is more than the proportionate increase in material up to a certain point. As lists grow, say beyond 25 items, the per item increase in time levels off or even drops in some cases. The longer lists, with more time spent in learning, are in turn better retained, due, no doubt, to the overlearning involved in certain sections of the list. One other important factor is closely associated with the length of materials. This is the method of presentation and attack. The relative value of the learning-by-parts as against the learning-by-whole has never been settled beyond question. As the length of material increases this second consideration becomes more implicated. Many laboratory studies tend to favor the whole method. Practical considerations such as lesson time, fatigue, and concentration span make some combination of whole and part learning most effective with children.

Position: All studies indicate that the first and last parts of memorized lists are best remembered. This applies most strikingly to nonmeaningful materials. In other cases, associative relationship may tend to offset the advantage of position. First experience creates vivid impressions, and

such motivating factors as novelty and zest operate to the advantage of the material at each end of the listing. Whatever practical advantage this positional preference may have in classrooms appears small. It is nonetheless noted and used by the careful teacher.

(4) **Nature of the Learner.**

Many of the things already said about the individual differences of learners applies directly to the problem of memorization. The following summarization is largely in the nature of a review of previous sections.

Sex makes no determinable difference in memorizing ability. Other factors such as interest in the type of material taught may be associated with certain sex grouping, but no significant difference can be found in the memory of boys and girls. Memorizing power is less affected by age differences than is generally acknowledged. Children do not memorize more easily or more quickly than adults. The depreciation in learning ability due to advancing age is not of significant importance. Memorizing ability correlates positively but by no means perfectly with intelligence scores. One authority reports correlations of .40 to .72 depending upon age and the type of material (48, p. 406). The claim is sometimes advanced that the slow learner retains better. The additional overlearning through extra practice might tend to support such a view. Empirical studies, however, produce evidence to the contrary. The fast learner appears to have all the advantage. He memorizes more readily, he recalls more information and what he has forgotten he relearns in the shortest time.

(5) **Forgetting:**

Many empirical studies have been made to determine the conditions and circumstances that contribute to the rate of memorization and to the amount of retention. One of the most startling outcome of such studies is the revelation of the almost phenomenal rate at which we forget material supposedly committed to memory. The pioneer study of forgetting was that of Ebbinghaus in 1885. He served as his own subject, and used nonsense syllables to eliminate as far as possible all traces of previous mental associations. Since that time numerous studies under varying circumstances have explored the field rather thoroughly and in general have verified the results Ebbinghous obtained.

The actual amount of forgetting as measured by these studies varies considerably. Factors that contribute to this variation in retention include at least the following:

(a) The difficulty of the material to be learned.

(b) The peculiar abilities of the learners.

(c) The method of learning.

(d) The criteria used to determine "the threshold of learning."

(e) The type of retention test used.

The following summarization would be supported by most experimental studies:

(a) An individual does forget the greater share of what he once knew.

(b) The initial rate of forgetting is much more rapid than the later forgetting rate.

(c) The amount represented by the so-called "forgetting curve" is not nearly so important as the form of the curve.

(d) When memory fades until recall is impossible some residual memory often exists as measured by the time necessary for re-learning compared to the time of original learning.

(6) **Effect of Recitation and Review:**

The practical application of memorization studies naturally places emphasis on the matter of recitation, spacing and review. Reliable evidence exists to indicate that recitation combined with reading results in faster memorization. After a few readings or presentations the learner attempts to repeat at least a portion of the material without reading or prompting. After some acquaintance with the material the recitation proceeds with prompting only as needed. In prompting, whether by reading or by listening, assistance should be given as soon as a genuine blocking occurs. Long struggles to recall or attempts to recite too soon, especially in the early stages of memorization, are unnecessarily time-consuming. Controlled experiments (27, p. 317) indicate an increase in efficiency up to the point where recitation occupies 80 per cent of the learning time. This efficiency stems from the practice involved, from the concentration it necessarily induces, from the knowledge of the progress it reveals, and from the clear indication it gives of the spots of errors and difficulty.

The question of review is one of immediate concern to teachers, since it has direct influence upon the teaching routine or the planned activities of the classroom. The following statement seems to summarize the position well. (26, p. 525)

"While there is no question that review is valuable educational procedure, it should also be appreciated that there are inefficient, monontonous and uninteresting methods of reviewing. However, just as indefensible is the refusal to capitalize on this important principle of learning because it has been abused. . . . It is seen at its best when material previously learned is recalled, or, if need be, consulted anew for purposes of attacking a problem to which it is pertinent. The so-called integrated course of study provides a feasible and effective procedure for implementing review, although . . . these advantages are not fully realized automatically."

MOTOR SKILLS

The growth of motor skills is understood more readily than is the development of memory, intelligence and similar faculties. Opportunities for observation are easily arranged. Control groups can be more carefully selected. Objective measures can be used statistically. Comparison of results enable researchers to verify and evaluate data. Repeated investigations make fairly accurate prediction of development in eye movement, hand grasping, stair climbing, walking and similar basic muscular controls. These fundamental movements are of interest to teachers but not of first importance. While further refinement and coordination may be necessary, the basic elements of grasping, climbing, sitting, bending and walking have been well established prior to school attendance age. Though the basic body movements have been developed in pre-school years, much remains to be done. Eye movements are essential in reading; printing and cursive writing require fine muscular control; drawing, singing, paper cutting, and speech involve motor skills; typewriting, sewing, decorating, drafting, shop work and industrial arts are largely manual performances. The entire physical education program makes coordination, grace and physical wellbeing important outcomes. Physical poise has much to contribute toward a pleasing personality.

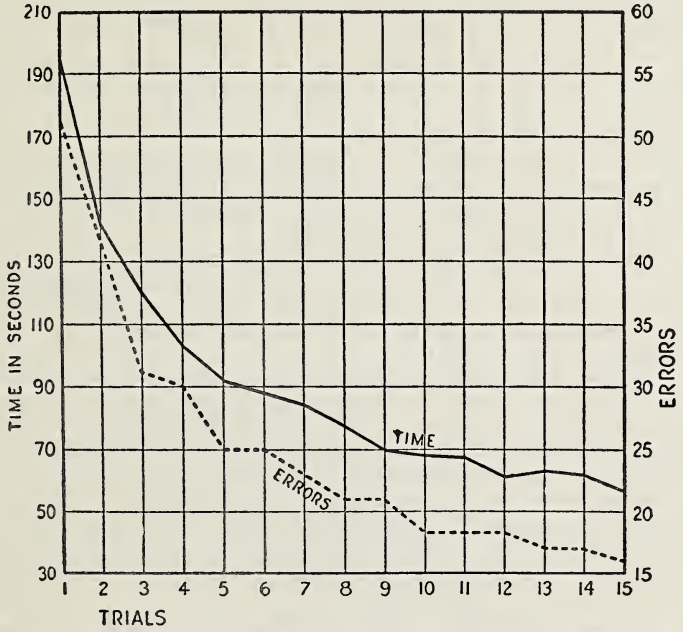
Actually many of the motor skills learned both in and out of school are developed into thoroughly grounded habits. The course of activity that under practice results in habit formation can be observed and promoted. The learner at first sets up or is assigned a task to be performed. It will usually subdivide into three parts, first, the general task or major purpose; second, the specific tasks or detail items necessarily contributing to the general task; and third, secondary tasks which may be only indirectly associated with the main or general task. The writing lesson in a Grade IV class might well illustrate the procedure. The general task is to reproduce in best form the words, sentences and exercises that have been assigned. The specific task concerns the individual letter formation, the slant, spacing and alignment of words. Secondary tasks may involve the turning of pages, the use of a blotter, and the care of pens. As the child practices pen-and-ink writing, habit formation changes the nature of the task. The general task appears to dwindle in its attention requirements and eventually drops out entirely. The details or sub-tasks persist longer but conscious attention again is largely eliminated. The secondary tasks are the last to become habituated probably because of less frequent repetition. Eventually the habit of writing is so firmly fixed as to become almost automatic, leaving the attention of the learner perfectly free to concentrate on other requirements for effective written expression.

As motor skills become habitual certain other important changes take place. Perception tends to diminish or to narrow. The highly skilled motorist may drive for miles quite unaware of the usual noises of the motor, only fleetingly aware of the road signs, yet attentively alert to passing cars, center lines and highway obstacles. The sequence of movements requires no conscious intent. He turns the wheel, shifts the gears, applies the brakes without interrupting his conversation or his listening. The whole level of control passes from the conscious to the nonconscious. Accompanying feelings tend to shift from tense uncertainty to relaxed pleasantness. A person finds confidence, assurance and satisfaction in doing the things that practice and training have confirmed.

Speed and accuracy increase as movements become integrated in smooth sequence. The typist develops key-striking movements for the whole

word rather than single letters. The pianist reacts to the signal of a chord or measure rather than to isolated notes and rests. Simplified tasks such as mirror drawing show a much more rapid improvement in both speed and accuracy than do complex tasks such as violin playing. Chart III illustrates

CHART III



Learning curves for time and errors in mirror drawing, based on mean scores of fifty subjects. (27, p. 223. Used with permission of the publishers.)

the decrease in time and number of errors for fifty pupils practicing mirror drawing. As a rule practice reduces the amount of fatigue from resulting performance over a limited time. This might well be expected because of the better integration of muscular movement and the decrease in emotional tension that normally accompanies a new task. Conflicting efforts, surplus motion and muscular tension are exhausting. Primary teachers must be particularly watchful to prevent rapid deterioration of motor skills such as printing through muscular fatigue.

The efficiency and economy of motor learning is related to certain qualifications within the learner. The first of these is motivation. The effect of motivation is no different in motor skills than in other learning. It may perhaps be much easier to arouse and sustain. The novelty of the performance, the objective measure of performance, the quick comparison of results all contribute to the child's interest. Children are naturally active and enjoy manipulation of objects which can be directly related to certain types of motor learning. Maturation is a second highly important consideration. The grade placement of motor learnings such as writing is most important. Actually since older children begin any motor learning with a higher level of initial performance their relative improvement may be smaller than that of younger children. The optimum learning will require neurological and muscular competence, but need not await complete maturation of muscle and nerve. Beyond childhood, motor learning may be difficult because of

lessening flexibility and decreasing interest. Sex differences have little demonstrable effect on motor learning. Boys frequently have more background training and possibly greater physical strength which may be beneficial in learning certain new skills. As adulthood approaches physiological differences will influence motor performance. Men appear to have a decided advantage in tasks where strength and vigor are important, while women often excel in tasks where precision of fine muscular control is the deciding factor. At early ages the correlation between motor skills and intelligence appears to be insignificant. At later ages the correlation rises, due possibly to an increased comprehension of instruction, a readier detection of error, and a higher intensity of purpose.

The nature of the instruction provided will also influence the efficiency of motor learning. Instructional methods which incorporate effective incentives will be more successful than those involving less attractive devices. Certain other conclusions are worth noting.

> "One must conclude that more rapid learning of such motor skills as writing and threading a stylus maze occurs when the individual is free to initiate his own movements and to make incorrect as well as correct responses than when he is manually guided in the correct performance." (48, p. 397).

> "Proper initial instruction will not only save the learner's time but will help to prevent the development of bad habits . . . Wrong habits established as a result of faulty methods employed in the early stages of learning prevent the attainment of a high degree of proficiency and are often overcome only with great difficulty." (27, p. 227)

> "If an incorrect motor habit has been established, it should be changed by providing an adequate substitute. Stress should be placed upon learning this new pattern and not upon avoiding the old pattern . . . . Negative restraints lead to motor inefficiency and to personal feelings of insecurity." (40, p. 169).

Instruction should direct attention primarily to the end result or the accomplishment rather than to the details of the movement itself. Spontaneous activity and participation will generally result in movements which are free, rhythmic and graceful rather than slow, restrained and tense. Poor coordination, many mistakes and general nervousness can result from undue emphasis on rigid muscular control.

Motor skill learning, particularly in primary grades often involves the questions of handedness. No conclusive theory for handedness has been established. The great majority of people are right-handed and consequently most equipment is designed for right-handed use. The resulting inconvenience to left-handers is probably the most logical reason for maintaining right-hand preference. Actually handedness has been well established long before school age, and teachers should hesitate to disrupt fixed preferences. Compelling children to change from the left to the right hand may result in nervousness which may be expressed in stuttering and speech difficulties. Such reactions are most likely due to the tensions and confusions within the child aroused by teacher pressure rather than to the direct change itself. The possibilities of unwholesome consequences hardly justifies the trouble in making such a change. Jersild sums up the problem nicely:

> "There is room for more systematic study in this area, but certainly it could be argued that the importance of handedness is often overestimated, and, what with all the other restraints adults must impose upon young children, they could at least let the child be free to lead with his left hand or his right, as he squares off for the battle of life." (39, p. 126).

CRITICAL THINKING

Critical thinking has been known by a great many other names: problem-solving, inferential thinking, scientific thinking, effective thinking, reasoning, or simply thinking. By whatever name it is known, it must be distinguished from rote memory, wishful thinking, daydreaming, prejudice, hearsay, fantasy or any related mental habit that may prompt response or color behavior.

The solution of problems through the rational exercise of knowledge, memory, imagination and similar mental powers is the culminating function of intelligence. This ability to derive satisfactory answers to pressing human needs through an application of mental faculties we know as critical thinking. It is safe to say that the development of critical thinking is an ultimate goal of all democratic education. Views may differ as to what constitute the critical problems and the satisfactory solutions for our times. But the avenue by which those solutions may be reached is unquestioned. The ideal of democracy is that every person shall understand and exercise this function of critical thinking.

Critical thinking is an end product of proper education. The mere recognition of a need or a problem no matter how urgent or insistent will not guarantee an application of critical thinking toward its solution. Infants, for example, and many adults as well, resort to overt trial-and-error activities when confronted by an urgent problem. Too often we see people seeking easy answers to basic problems through an appeal to tradition, demagogues, or propaganda agencies in preference to the exercise of some higher mental process. Educators sometimes fail to recognize that critical thinking, while dependent upon certain native capabilities, is largely an acquired ability, subject to training and modification and improvement. If schools are to make any significant increase in this vital behavior pattern (and one authority suggests that "an improvement of 5 to 10 per cent over prevailing conditions might . . . change the course of history" 26, p. 205) classroom practitioners from the kindergarten to the graduate school must be diligent in recognizing and fostering the pattern of its development.

Attention has been focussed on the process of critical thinking by the growth of what is commonly called "the scientific attitude". The objectivity of modern scientific investigation has created a desire to apply the same basic reasoning to the nonscience fields of learning. While such an approach has much to commend it, some doubt still exists as to the feasibility or even the desirability of complete objectivity in matters relating to human relationships. Is it, for example, possible or desirable to apply to the problems of minority racial groups the same impersonal touch as to the experimentation in the grafting of fruit trees? Is a re-alignment of human values essentially different than a biological phenomenon? Can problems that may constitute a threat to our security and progress be solved as a straight exercise in ingenuity? The prosecution of war, with its consequent depreciation of individual aims and of human life seems more objective and "scientific" than the establishment of a framework for lasting peace. The full measure of scientific detachment can hardly apply in those problems of social concern that face our society.

An increased understanding of the full story behind scientific progress would contribute to critical thinking in non-science fields. Too often scientific thinking is considered synonymous with high school science experimentation, with all factors isolated, controlled and measured, and with a mechanistic routine procedure automatically leading to an unvarying conclusion. The present search for effective cancer control illustrates the point. Physi-

cians, surgeons, physicists, bio-chemists, zoologists, psychiatrists and similar specialists are co-operating in experiment, re-checking results, exchanging suggestions and ideas. Imagination, intuition and trial-and-error are all parts of the process. Enthusiasm, faith, courage and patience are important equipment. Credit for the eventual victory will belong to all in proportion to their efforts.

The Pattern of Critical Thinking:

If critical thinking is accepted as an acquired ability, it seems logical to examine the pattern or structure of its growth in order to devise effective means of teaching it. Reading in the field of learning leaves one with the impression that there is no rigid formula that guarantees effective inferential thinking, nor are all the factors that contribute to the process understood in complete detail. There are, however, certain essential phases upon which specific instruction can be offered.

> "They (the essentials of reflection) are first that the pupil have a genuine situation of experience—that there be a continuous activity in which he is interested for its own sake; secondly, that a genuine problem develop within this situation as a stimulus to thought; third, that he possess the information and make the observations needed to deal with it; fourth, that suggested solutions occur to him which he shall be responsible for developing in an orderly way; fifth, that he have opportunity and occasion to test his ideas by application, to make their meaning clear and to discover for himself their validity." (38, p. 192).

(1) **Recognizing the Problem:**

Critical thinking begins with the recognition of a problem. The recognition of a problem is not such an easy matter as one might suppose. Ample testimony for that statement can be found in the dull unchallenging routine of rote memorization and repetition that in thousands of classrooms daily passes as education. How many high school students realize that their low achievement in mathematics arises from a reading deficiency? How many teachers have diagnosed a disciplinary situation as one stemming from the routine boredom of a superior intellect going unchallenged day after day in a crowded classroom? History books are full of the accounts of kings, politicians, and generals who missed completely the problems of their day which the perspective of time now reveals so clearly.

Somewhere in the analysis of critical thinking the question occurs, "What constitutes a genuine problem?" The ideal is a situation in which the pupil experiences a definite sense of deficiency, a conscious self-involvement, and yet sees no direct means of satisfaction. It further implies that he has sufficient background experience to avoid complete bewilderment and that he is free to initiate any one of a variety of activities aimed at a solution. In many instances the factor of self-involvement creates uncertainty. Can an historical dilemma far removed both geographically and chronologically from the school, ever present a genuine challenge to a class? If so, in what way does the class feel any self-involvement, or any "disturbance of the equilibrium" that marks the normal problem situation in daily life? Can pupils recognize real problems in the chemistry experiment, in the arithmetic question, in the historical event, or must the school depend upon student government, co-curricular activities or the home-school relationship to present genuine problem situations for pupil concern? The question is an important one if the school hopes to make any significant improvement in the critical thinking of the scholars.

The majority opinion respecting "problems" within the school might possibly be summarized as follows:

(a) Pupils learn more readily and with increased zest when such learning contributes to goals in which they have some degree of personalized interest.

(b) Good teachers find within the ordinary events and experiences of the class problem situations which can be identified with class learning.

(c) Through skilful teaching pupils can develop a vicarious self-involvement in problems quite removed from their immediate personal lives. "When a social situation poses for the individuals involved in it or **interested by it** the task of making a decision regarding social conduct or belief, then the social situation becomes a social problem." (32, p. 1).

(d) In any vicarious problem the solution will constitute the consideration, studying, reconstruction and evaluation of appropriate activities.

(e) Most pupils possess a natural curiosity and a natural interest in creative activities that serve to stimulate and sustain problem situations in the classroom.

(f) In the interest of economy of pupil time and teacher effort, it may be necessary in the average classroom to require a minimum amount of work whose relationship to recognized problems is nominal and distant.

Certain limitations and precautions are essential when a teacher undertakes to utilize the problem approach to the class. The first of these is that of individual differences.

> "It is a matter of common observation that what seems objectively to be the same situation may constitute for one person a puzzle (complete bewilderment), for another a problem, and for a third a condition with which he is thoroughly acquainted." (28, p. 416).

A second consideration is that while the teacher may take the lead in suggesting or identifying the problem, it must be recognized and accepted by the child as of importance to him not only as a student but as a human being if it is to stimulate critical thinking activity. It can be said without contradiction that the best teachers are those who most effectively challenge the pupil to identify his own deficiencies and to do something about them.

(2) **Defining the Problem:**

When the learner has realized the existence of a problem, either vicarious or first-hand, he is then ready to proceed with a closer examination of its salient features. It may be that the problem is so elementary that the learner comprehends its basic issues at first glance. The very statement or recognition of the problem may in itself constitute the definition. If, however, the problem is more intricate, the recognition of the deficiency need not reveal all the issues and implications. The second stage of critical thinking requires a careful scrutiny and analysis of the issues presented by the situation. Take, for example, the case of a high school student who recognizes poor reading performance as the cause of his low scholastic attainment. He must explore the situation further to determine whether the weakness is a matter of reading speed, or low comprehension or both. He probably does not know enough about the nature of the reading process to appreciate fully his own deficiency. Only when he does understand something of the complexities of the situation confronting him will he be in a position to take effective action toward its solution. False starts, fumbling and ineffectual activity or unnecessary hesitancy accompanies the vaguely-defined problem.

In this definitive step, the learner may need some assistance from his instructor or counsellor. Certain observations can guide the clarification of problem situations for younger students:

(a) The delimitation of the problem should serve to identify the basic issues or questions, to indicate the direction of needed effort.

(b) The wording of the problem should be kept as simple as is consistent with the nature of the problem.

(c) One point of considerable confusion in defining problems occurs when the situation moves from the abstract to the concrete, or from the particular to the general. When such transitions become an integral part of the problem, care should be exercised to avoid error or mis-statement.

(d) In formulating the definition use should be made of background or previous knowledge that can apply to the problem.

(3) **Organizing Relevant Data:**

The third stage in critical thinking concerns the utilization of all evidence that can contribute toward some satisfying goal. This period of research normally involves three inter-related tasks. First, the location of data; second, the determination of its meaning or significance; and third, its organization into the most useful form. In some instances the problem may concern an area with which the learner has an extensive acquaintance. In such a case the recall of data and its application may be a quick and simplified task. Generally, some collection and organization of new material will be necessary.

The possible sources of relevant data are so numerous as to defy classification. In most classroom situations the sources are limited, unfortunately, to printed matter and books, and even these are frequently inadequate. The teacher's task is to do everything possible to make the supply of source material as rich as possible, to point out any unavoidable omissions, and to make fruitful use of all that is available.

After locating what appears to be pertinent material, the pupil must be ready to determine its significance and to weigh its validity. He should distinguish original sources from secondary sources, and well-documented materials from unsupported statements. He should have some clue as to what constitutes a reliable authority, and if possible some opportunity to examine the opinions of acknowledged authorities. He should recognize and allow for opinionated views or rigid bias. Most of all he should learn to recognize statements of fact from statement of opinion, and to weigh each accordingly. In collecting data the pupil should seek sources and interpretations that deal with more than one angle of a complex question, or with every side of a controversial issue.

Finally the pupil must arrange the collected data in a useful form. Frequently this requires some re-grouping, or re-arrangement into major points and supporting evidence. Warning should be given against too great a reliance upon memory. Better to make notes and tabulations than to be caught short on facts or wrong in quotations, statistics or other supporting evidence.

The importance of data, relevant in quality and adequate in quantity cannot be overlooked. Critical thinking is of little use if the facts of the case are simply not available or are not considered. Stroud expresses a sound position respecting objective evidence:

"The learning of facts is not to be dispensed with. Knowledge of facts and a wholesome respect for facts are major educational objectives. It is the attempt to learn mere facts, facts as isolated phenomena, that is to be decried. Certainly one of the chief reasons why so much thinking is incompetent is that the thinker simply does not know the facts in the case. There is no surplus of factual knowledge. There is hardly ever enough. However, if thorough, well-rounded, useful knowledge of facts can be acquired only at the expense of teaching fewer facts—and such is the case unless we can learn to teach them more effectively—then this remedy is heartily recommended. Factual information should be taught or learned only when it contributes to the understanding of something. Were the acquisition of specific items of information thus always made subordinate, there would not be any question of learning too much factual information, or of learning useless information, or information that cannot be applied. Rather the problem would always be to acquire enough information to make an intelligent attack upon a problem and to reach a valid conclusion. If the teacher and the pupil start with a problem—a problem that is meaningful to the pupil, one that, in the light of his mental development, he is ready to consider—and proceed to a search for and an examination of the facts relative to the case, one of the prime conditions for the development of critical thinking is met." (26, p. 206).

(4) **Formulating Hypotheses:**

The fourth item in this discussion concerns the formulation of suggestions for progressive action. This is often the most crucial of all steps in critical thinking, and is the one in which training and direction are the most difficult to offer. It is the most subjective phase of the reasoning process, and the one in which innate capacities operate most predominantly. The origin of suggestions for solution lies in the relationships and inferences that become apparent to the learner as he considers and reviews the pertinent data. The advent of a defensible hypothesis may be saltatory, or laborious. The sudden "insight" solution has, of course, been popularized by the Gestalt psychologists, and dramatized in much of their experimentation. To suppose that the majority of solutions arrive with vivid spontaneity would be misleading indeed. Many of the notable contributions of great men have been developed arduously, bit by bit, with much checking and re-checking. The field of science could reveal numerous illustrations of men who after intensive study followed lead after lead, clue after clue, until their persistence was rewarded by a successful outcome. Still other problems have defied all efforts to date and remain as yet unsolved.

Accepting the great significance of native capabilities in the formulation of defensible hypotheses, the teacher can still do a great deal to promote inferential competence in his students. The student should have just enough guidance and suggestion to prove provocative Errors need not be corrected when they first appear but should be pushed to the point where the fallacy becomes readily evident. The necessity of checking even the "blind alleys" should be emphasized, and the futility of fruitless repetition avoided. The virtue of persistence should be cultivated but not to the point where emotional disturbance may result. A fresh start after a reasonable rest will often reveal new clues and leads. The use of the imagination in conjunction with all available data may pay dividends in rich suggestions. The courage of a young student to make a "guess' after considering the facts should be respected. Class ridicule or teacher rebuff are almost sure to produce negative results in both the immediate problem and the reasoning pattern of the child. Repeated errors must be revealed and corrected, but the

revelation should come through exploring the consequence rather than from authoritative stigmatizing. Perhaps most difficult of all is to lead the child, or adult, to recognize, accept and allow for his own bias, prejudice and defect

(5) **Verifying Conclusions:**

"The proof of the pudding is in the eating" says the adage, and its wisdom is endorsed by scientific thought. The theoretical is of little use if it does not in large measure check with the practical; hypotheses are idle if they do not correspond to reality. The final step in critical thinking is the verification through application of the tentative conclusion that has been reached. Critical thinking does not deserve the name if it fails to insist upon a proof of results through an application to the original problem situation. Conclusions must be considered as provisional until verification is established through some acceptable means. It is not an easy matter to abandon a position reached after some deliberation but which proves to be not in accord with the realities of the situation. Most people in such circumstances tend to defend rather than to reconsider. The process of critical thinking demands that any "solution" which does not solve the problem be re-examined and if necessary discarded.

It would be a mistake to assume that any solution which failed to lead to complete eradication of the problem must forthwith be put aside and the effort counted as worthless. In the first place if the results are wholly negative, then at least one avenue has been explored and labelled as unproductive. Seldom, however, is a solution an all-or-none proposition. Seldom is a problem of any depth or complexity solved by one stroke or any tension relieved by one adjustment.

(6) **Dynamic View of Critical Thinking:**

Any pattern of steps or activities, however logical, can never do full justice to the thinking process. The very act of enumeration tends to crystallize and rigidify what is actually a spontaneous dramatic movement. The Gestalt psychologists have been most critical of any lock-step explanation of this crucial human capacity.

> "Traditional logic is concerned with the criteria that guarantee exactness, validity, consistency of general concepts, propositions, inferences and syllogisms . . . To be sure, sometimes the rules of traditional logic remind one of an efficient police manual for regulating traffic." (37, p. 6).

The Gestalt viewpoint reduces or eliminates all static elements in the thinking process. Basic points of reference, including definitions, personal attitudes, original assumptions, even the nature of the original problem, vary and change as productive thinking proceeds. Blind habits and fixed associations, drill techniques and special interests are rejected. Piecemeal, sectional approaches may, they contend, produce only an additive result which may be inadequate or even erroneous. Instead the emphasis should be on the total structure of the whole problem and its relative parts. Each new item may alter the entire structure. Instead of fixed operations or predetermined steps the basic processes become the grouping, centering and re-organizing of relevant factors. The thinking process does not itemize, isolate, reserve and pigeon-hole data, but rather carries it along with a continuous re-orientation of parts and elements, and a re-direction of effort as tentive outlines become apparent. To avoid the possibility of hasty judgment and jumping to conclusion the dynamic view emphasizes "struc-

tural truth" as against "piecemeal truth." This emphasis tends to keep all conclusions to some extent tentative, and all results subject to constant review and evaluation.

In considering both the patterned view and the dynamic view of the thinking process, teachers may well find elements of value in each. For the young child the pattern approach has an advantage of clarity and easier comprehension. For the mature mind the dynamic view has spontaneity and freshness that is attractive. Sound thinking may require a portion of each. Our schools, and perhaps our whole society, seems to encourage a tendency to make snap judgments and to launch unconsidered activity. School children too often critically review and evaluate the present problems of national weight. Adults frequently live on a "Lets's-see-if-it-works" basis. These things may be good, for certainly progress requires criticism and action. But they are not enough. Democracy demands some insight into the basic elements and structures of crucial situations. Democratic citizens must learn to participate actively, to face problems directly, to lay plans carefully, to survey the long-range program accurately, to follow the accepted course courageously, but to seek improvement above all, even at the cost of self-interests. Only worthwhile productive thinking can reveal the true dignity of man.

MOTIVATION

All learning activity is directed toward the attainment of some end. In so far as we accept learning as a conscious controllable process the goals toward which learning aims may also be consciously recognized. In those cases where the drives that prompt human behavior are subconscious, effective learning is hardly an appreciable outcome. Such behavior might include certain activities arising from persistent habits, phobias, or unrecognized tissue needs. However, in all such cases learning, with its implied modification of the behavior pattern, has long since ceased. The study of motivation of learning then can be confined to those drives which are recognizable and controllable.

Motivation is widely recognized as an indispensable factor of economical learning. A motive has been defined as "a form of persistent stimulation that dominates the behavior of the organism until its conditions are satisfied" (26. p. 598). It has already been defined in this bulletin (p. 46) simply as the desire to learn. The vocabulary commonly applied to full discussions of motivation is often confusing since it employs a number of rather common terms with specialized meanings attached. 'Goal', 'purpose', 'aim', 'drive', 'motive', 'interest', 'aptitude', 'set', 'readiness', 'incentive', and 'expectancy' are examples of terms having special connotations in various texts. Since the purpose of this review is to summarize applicable findings rather than to develop defensible theories the use of such terminology will be minimized. Understanding of the field can be promoted by reviewing certain concepts that appear to be generally accepted by the authorities.

(1) Motives are essentially internal and individual in nature. The desire to learn may be prompted by objects, symbols, events, or persons other than the learner, but only the learner can accept and act upon such stimulation.

(2) Set or readiness denotes the preparatory activities that lead to a conscious desire to learn, the "build-up" as it were. Such preparatory activity may go unnoticed by the individual for some time, but will gradually or suddenly impinge itself upon his attention. The set is related very intimately to past experience. Frequently it is a culminating process and it may in itself be largely a learned process. Primary teachers are already familiar with several manifestations in early school life, as for example in reading and number work.

(3) Incentive is defined as the object or the symbol, which the person eventually hopes to attain. Incentives are closely related to motives, but are generally accepted as being external to the person. They are often identifiable with the term "goals" with some possible fine distinctions. Incentives are commonly associated with conditions. 'Incentives' connotes an initiatory or accompanying quality, while 'goal' connotes a terminal or concluding quality.

(4) Primary and secondary drives are generally distinguishable on the basis of origin. Organic or tissue needs, arising from physical deficits or tensions, are called primary, while those that are learned or acquired are called secondary. Hunger, thirst, and fatigue are primary drives; pride, honesty, and sympathy are secondary. Undoubtedly there is an original connection between the motive and the acquired drive, but that association is generally lost rather soon and the acquired drives are accepted as motives within themselves.

(5) Intrinsic and extrinsic motivation also have definitions bearing upon the origin of the drive. Intrinsic motivation arises from inherent

qualities of the material to be learned. Extrinsic motivation depends upon some additional factor outside the learner or the material but which comes to be of consideration to the learner. Extrinsic motivation may be of a positive (attractive) nature or it may be of a negative (repellent) nature. Extrinsic motivation has often been attacked or at least decried as being artificial, transitory and degrading. Admitting that in extreme cases the extrinsic rewards may have been seriously abused, nevertheless, a rather sound case for the encouragement of extrinsic motivation can be presented. On the practical side one can scarcely deny that in the world outside school nearly all productive human activity is motivated at least in part by extraneous considerations. Extrinsic motivation includes much more than material rewards and subject marks. It may include such urges as social approval, social concern and cooperation, and social conformity. To wait for love of learning to motivate the immature school child would put an impossible handicap on the classroom teacher. The practical question is not whether to use extrinsic motivation, but rather what extrinsic motivation is dependable and effective. One might well hesitate for example to endorse fully the following position taken by Stroud, "A pupil who studies in order to worst a rival, to please his parents, to gratify his ego, to earn a good mark or win an honor probably stands to learn as much as a pupil who studies with equal zest in order to become a cultured citizen. When a student learns he has the learning." (26, p. 630). After all, education includes more than factual information, and worsting rivals and gratifying egos are aims that can most easily go astray. Stroud's observation that "when a pupil learns he has the learning" applies with equal force to the less desirable and the negative.

(6) Interests and attitudes are terms commonly associated.

Interest might be regarded as an abiding concern or some special attention devoted to any particular object or situation. Closely related is the concept of attitude which involves a fixed predisposition, tendency or mental set toward some specified object or situation. Obviously, favorable pupil interest and attitude will do a great deal to implement learning in any situation. The relationship of pupil interest and school activities are consequently of major concern to every teacher. The interdependence of pupil interest and curriculum has been one of the most misunderstood issues in the activity education movement. Upon that ground the opponents of progressive education based charges that progressive curricula favored material that was trivial, illogical and without sequence. No program, so they contend, can cater to the interests of a ten-year-old and still remain logical and comprehensive. Juvenile interests are too transitory, insubstantial and unpredictable to permit the development of a satisfactory program. What has so often been overlooked is the fact that interests are largely acquired. The interests of a child have been learned from past experiences, and the interests he needs can be learned through more properly directed experience. The progressive teacher does more than teach lessons in line with present child interest; he teaches interests which can motivate those learnings which, in his maturity, he realizes the child will need and can appreciate.

Another consideration not to be overlooked is that interest may include interest in means as well as interest in ends. If learning becomes the means of attaining social recognition then interest in attaining that recognition may stimulate or reflect iterest in the learning to be undertaken. This interest in the means is not necessarily artificial or spurious, it is an interest in a whole rather than in the part only. The relationship of pupil interest to subject matter is nicely covered in a quotation originally taken from the writing of John Dewey. "The assertion that after subject matter has been selected the teacher should make it interesting combines in itself two

thoroughgoing errors. On one side, it makes the selection of subject matter a matter quite independent of the question of interest . . .; and further, it reduces method in instruction to more or less external and artificial devices for dressing up the unrelated materials, so that they will get some hold upon attention. In reality, the principle of 'making things interesting' means that subjects be selected in relation to the child's present experience, powers, and needs; and that . . . the child appreciate its bearings, its relationships, its values in connection with what already has significance for him." (26, p. 634).

All interests normally grow out of experience. Not all experience necessarily results in interest growth and improvement. Teachers must accordingly be ready to evaluate child experience to determine what contribution it can make toward the enrichment of pupil interests. Certain qualities tend to make experience more satisfying and consequently have a stronger interest appeal to most youngsters.

(a) Experiences that are linked or related to previous undertakings and consequently have some degree of familiarity are apt to promote interest.

(b) Experiences in which the child is able to participate with others are apt to promote interest.

(c) Experiences in which the child has gained some previous success, recognition and competency are apt to promote interest.

(d) Experiences which have direct concrete consequences, outcomes or results are apt to promote interest.

(a) Experiences which are recognized by others, particularly by adults, as being of value and worth are apt to promote interest.

(f) Experiences which have pleasant consequences are apt to promote interest.

(g) Experiences which are appropriate to the level of intelligence and ability of the pupil are apt to promote interest.

Empirical Studies of Motivation:

Motivation, being a completely personalized condition, cannot be measured and observed categorically. Its presence, stability and strength must be inferred from the observation of its effect upon learning. Since learning is measured largely through behavioral pattern, the complexity of the problem of determining motives, and initiating and controlling them becomes readily apparent. There has, fortunately, been a great deal of experimental work done on motivation studies. Results are not always uniform, and in many studies a tendency toward an over-simplification of the motivating influences may be detected. The full details of such studies would exceed available space in this bulletin, but a survey of the findings and conclusions offers guidance and direction for classroom teachers.

(1) **Reward and Punishment:**

All motivation experiments are to some degree of a 'reward and punishment' nature. Every learning situation is dependent upon some state of tension within the individual and the relief or dissolution of the tension is in itself a reward. Furthermore, punishment is generally considered to be a source of genuine annoyance. Cases exist where it is difficult to decide whether punishment actually promotes genuine annoyance. For example a reprimand by the teacher may actually bring inward satisfaction to the boy who used mischief as a method of drawing the attention of classmates and teacher to himself. Punishment is generally thought to have a dissuading

influence yet Thorndike found that mild electric shocks stimulated learning. Prescott (24, p. 169)) concludes that punishment administered for mistakes made during learning does improve the speed and efficiency of learning provided it does not reach more than a critical intensity. Severe punishment has been found to have disorganizing effect, tending to make behavior random and meaningless, probably because of the high emotional condition it engenders.

Experiments reveal that material reward has some favorable effect upon ordinary school learning situations. Subjects have ranged from feeble-minded children to scholarship students at Yale University and, in general, material rewards have stimulated the learning processes. (28, p. 315). The awarding of grades and marks has often been criticized on the basis of artificiality. The complaint has been that students tend to work for the mark rather than for the knowledge, that the shadow supersedes the substance. From the practical point of view it appears that so long as marks and gradings are given educational acceptance by the public and the school alike, pupils will be justified in seeking to improve their mark standing. If marks do not correlate highly with genuine improvement then perhaps the fault lies as much with the evaluation program as with the marks themselves.

(2) **Praise and Reproof:**

The most noted experiment in this field by Hurlock (26, p. 626-7) indicated that while consistent praise created a steady improvement, blame and reproof had little positive influence at least in so far as arithmetic skill was concerned. Other authorities have found conflicting results, particularly in respect to reproof. One recent study makes a very significant point, namely that the effects of both praise and blame depend **largely upon the individual who administers the praise and blame.** Praise and blame are found in themselves to be of minor consequence in comparison to the relationship between the administrator and the pupil.

(3) **Social Situation:**

Group recognition and social approval can be repeatedly observed as motivating influences on human behavior. Research indicates that the presence of an audience accelerates learning. The presence of other learners also motivates learning, although in such cases the factor of rivalry or competition is normally added.

(4) **Competition and Rivalry:**

Competition in some form enters into nearly every field of endeavor in western culture. This prevalence, particularly in economic and industrial life, undoubtedly has considerable bearing upon its acceptability by both pupils and teachers. Having been all but universally accepted in our culture pattern it is not surprising to find that competition and rivalry have salutory effects upon the motivation of human behavior, including learning activities. Those who look for the school to mirror our pattern of culture point out the desirability of making the classroom "true to life." The frequency of rivalry in the business world can scarcely be accepted as justification for its indiscriminate use in the classroom. The total effect upon personal development rather than the efficacy of school learning must be the final criterion. With this point of view, teachers will recognize that rivalry must be used with discretion and caution in classroom situations.

Experiments have recognized two forms of competition: self competition and social competition. Social competition in turn can be divided into individual competition and group competition. The results of experiments in self-competition, or working against one's own previous record, vary

widely among individual pupils as one would naturally expect. Some maintain a real interest, others show little positive reaction. In most practical situations school children compare results not only with their previous performances but also with those of their classmates, thus introducing the element of individual competition.

Social competition or competition against others on either an individual or group basis has been widely investigated. A summary of results indicates:

(a) Competition results in decided improvements in routine classroom learning.

(b) Effectiveness of group competition versus individual competition is difficult to measure since even in group activities individual comparisions are inevitable and uncontrollable.

(c) Most children appear to prefer individual competition to group competitions and exert themselves more readily in individual competitive situations.

(d) Evidence would indicate that poor or inferior workers were more stimulated by competitive conditions than were superior students.

(e) Competitive spirit seems to be most active between the ages of 6 and 18, and depends in the main upon the appeal the prize or outcome may have for the age group involved.

(f) No reliable differences between the efforts of boys and girls under competitive conditions have been established.

While wholesome rivalry and friendly competition can provide effective classroom motivation the teacher must be alert for abuses that may offset apparent advantages. Social concern and mutual helpfulness are genuine values that should find opportunity for expression in frequent classroom situations. Furthermore, classroom competitions have a tendency to place undue emphasis on the quantity rather than the quality of the work done.

(5) **Knowledge of Results:**

Experiments indicate that a knowledge of the results of previous work has a positive effect upon most learners. Control groups are difficult to establish since a review or recitation by the learner serves in itself as a self-check on progress, and also since competition with others almost invariably occurs. However, results of many experiments provide reliable evidence that the child who is fully informed as to his own progress generally shows appreciable improvement.

Complementary to these studies are those attempting to measure the effects of success and failure on motivation. The measure of a failure or a success has to be related to the "level of aspiration" or expectancy of the learner. Young's conclusion is that "the effects of success and failure are relative to one's level of self-evaluation. The dull child with a sense of inferiority may be more highly motivated by success, praise, or encouragement than by the opposite of these incentives whereas the gifted, self-confident individual may be more highly energized by failure and reproof. It is the disturbance of the status quo which is motivating." (29, p. 739)

(6) **Other Emotional Factors:**

All motivation is, of course, directly related to the emotional condition of the learner. Emotional stimulation is concurrent with motivation, both positive and negative, and is involved in every motivation study. Wholesome motivation depends upon proper emotional cultivation, not eradication nor inhibition. When emotional fulfilment can be associated with desirable goals

learning tends to become directed, purposeful and effective. Reference has already been made to the chaotic emotional effects of severe punishment. Prescott finds that pleasant or unpleasant feelings, mild emotion, strong emotion, and profound shock may have very different learning consequences due to differences in physiological concomitants (24, p. 179). Music for example generally facilitates several types of learning. Time limitations appear to heighten emotional tension and favorably influence test scores (24, p. 174). Individual differences in the degree of emotional stimulation have direct influence on the learning process.

Long Range Motivation

It would be a mistake to assume that the problem of motivation is essentially the manipulation of external factors to excite the child to learn. Nor should motivation be wholly indentified with immediate objectives. The devices and techniques reviewed in the preceding pages are largely short-term, immediate, perhaps even atomistic in nature. They will provide added stimulation with proper application, and in specific test instances may show to advantage. In the long pull of a full year's work some doubt may well exist as to the possibility or desirability of applying even a variety of these devices repeatedly for each class and each lesson. Whatever possibilities can be found for long term motivation should be thoroughly explored in every classroom. In conjunction with the more immediate incentives and devices already listed, they may serve to improve the productivity of routine classroom practices.

(1) **Social Motives:**

The first of these long-range possibilities involves the social relationships within the school community. The manifestation of these social motives may differ widely in individual children since they are in large measure learned or acquired. Despite any normal variation, social drives are near-universal and of high intensity. One of them concerns the desire for social recognition or praise. Under this stimulus the pupil behaves in such a way as to win attention, recognition and approval, at least from his classmates, if not the teacher. With the child attention will normally rank higher than approval, a fact which may occasionally lead to behavior problems. The child who cannot gain social recognition through approved activities, may sacrifice the approval of the teacher in order to attract a satisfying share of social attention. A second social drive is the need for security. All children normally feel dependent upon some older person, usually an adult, and particularly upon parents or teachers. This dependency or need for security is modified at various stages of life but it remains a strong and valid driving force. A third social motive is the desire for self-assertion or mastery. Persons seek to get ahead, to excel or even subordinate others. In serious form it results in bullying, quarrelsomeness and general over-aggression. In controlled measure it stimulates leadership, initiative, friendly competition, and general ambition for progress. A fourth social drive is the desire for conformity. Persons like to belong to a group. They shun being odd or different. This conformity drive is not necessarily the converse of the prestige motive. The child may wish to be the leader or dominant figure but he still wants to belong to the group. This drive varies in intensity with maturation. At one stage of life the "gang" or group affiliation is a most powerful consideration. The ostracized child is usually unhappy, and depressed, and may develop strong inclinations toward excess introversion. These social motives are in some respects related to devices previously mentioned such as praise and blame. They may be applied positively or negatively. Social recognition, security and self-assertion for example may be denied, either consciously

or unwittingly. The better course however would appear to make positive controlled use of all, each in proper degree to meet the interests and personalities of the class. **The classroom in which recognition, security, leadership and group status are freely given by teacher and pupils alike will be a busy, productive, happy place to live and work.**

(2) **Habits and Interests:**

Another major group of long-range motivating influences we may classify as habits, purposes and interests. Habitual actions tend to perpetuate themselves. The child who normally studies well will continue to study effectively even though his temporary disposition or inclination may be otherwise. The establishment of proper study habits and regular study hours will tend to establish a habit pattern that will keep learning under way at an acceptable pace. Over a period of time this habitual study may largely lose its significance and the child may be going through the motions only. Alone it is not permanently dependable. In association with other more positive vital motivation it can be a steadying influence. Interest and purposes are acquired through experience coupled with natural inclinations and curiosity. Boys for example are more prone to manual manipulation interests than are girls, but the question of whether the immediate object of manipulation be a toy airplane or a fishing rod depends largely upon experience and availability. Interests are in part dependent upon maturation. Play activities on any school yard reflect the varying interest levels or ages found among children. This variety and change of interest is a natural and desirable feature of childhood. It permits teachers to exert effective guidance. Exploration and sampling of new interest areas broadens appreciation and facilitates substitution where thwarting and blocking might cause excess conflict and frustration. Childhood is the time when parent and teacher should strive together to widen the range of wholesome interest. As the student matures interests normally become more permanent. Greatest achievement seems to be dependent upon a narrower, intensified, relatively permanent interest in some field. This mounting sense of purpose will give direction and stimulation to effort in all learning situations that relate to the end in view. Closely allied to interests is the matter of ambition. The level of aspiration constitutes the hope or belief one entertains regarding his own progress. Successful students tend to set a level of aspiration which can be reached with normal effort. Unsuccessful students show less consistency, setting their expected attainment ridiculously low or impossibly high. The teacher who can induce pupils to evaluate their own ability objectively enough to accept reasonable levels of aspiration for future efforts will thereby stimulate effective learning. In addition some psychologists contend that each problem confronting the learner sets up some motivation toward its own solution or completion. The sense of tension accompanying the recognition of a problem will persist until some solution or rationalization is reached. Activity arising from such urges will naturally be of importance to teachers. It will be unnecessary to warn experienced teachers against over confidence in this more spontaneous motivation. Confronting a pupil with a problem, particularly a teacher-inspired or text-originated problem will not in itself guarantee effective activity on his part.

(3) **Ideals and Values:**

The third type of long-range motivating influences are ideals and values. These interrelate and overlap with items mentioned elsewhere in this discussion. They are however of such educational significance as to deserve some further notice. Ideals involve some goal concept plus an impulse or desire to attain that goal for oneself. They are associated with concepts of right and wrong, moral and ethical behavior. Infants appear to be nonmoral.

As maturation and experience add to comprehension, the child learns to distinguished between evil and good, falsehood and truth, vice and virtue. As researchers have noted (36, p. 328) a child may be consistently honest in one situation, and cheat readily in some other situation. The generalization necessary to make ethical principles equally effective in all situations can seldom be developed early. Behavior will be controlled and motivated in some degree by the nature of the values the child gradually learns to accept as desirable. The nature and force of these moral and spiritual values may depend upon their origin. A great many people find that religion is the major source for the creation of lasting human values. Others contend that the democratic social creed supports ethical principles of the highest order. Whether true morality can be drawn from the ideals of democracy, or whether it demands the faith of religious beliefs the fact remains that it can be strengthened by the exemplary conduct of admired associates and can be expressed through daily contacts with other people. The problem of long-range motivation is in considerable degree the problem of establishing a moral code which will be effective, desirable, and consistent. Conflicting goals mean divided energies, and less interested students.

Conclusions:

Every experimental study and every authoritative discussion of learning repeatedly emphasizes the essential role of motivation. A task once undertaken tends to set up its own tension or motivation that can be satisfied by the completion of the task. Furthermore, interests can be built up as learning proceeds and motivation may consequently be accelerated as the task develops. Even so, initial motivation is so important to effective learning that one wonders whether it is given sufficient attention in the routine practices of classroom teachers. Teachers can become so absorbed in the factual content of lesson materials and so intent upon developing methods of presentation that they may easily overlook the essential question as to whether the child himself has any genuine interest in or desire for the learning about to be undertaken. It is reasonable to believe that schools can provide effective learning situations only when the development of child interest and motivation is a significant part of the planned program which they provide.

The following summary reviews suggestions pertinent to daily classroom work:

(1) Interest can be developed. Most of the motivating interests or desires apparent in ordinary life have been learned. The broadening and deepening of pupil interests is one of the most vital functions of good teaching. The concept of a curriculum based upon child interest assumes that the school will also exert efforts to build interests substantial enough to justify such reliance.

(2) Goals and aims of school lessons must be in harmony with the desires of the learner. Not only must the nature of the goal appeal to the child, but the possibility of attainment must be not too remote. Distant goals are apt to lose their motivating appeal even to adults. For children the goals must be relatively immediate and reasonably possible. Tasks too difficult tend to discourage pupils, particularly the less able. Repeated failure destroys interest, and undermines confidence. On the other hand too easy a task fails to challenge the best efforts of the student. School assignments should be kept clear, of reasonable length and of moderate difficulty.

(3) Motivation hinges on meaning. Unintelligible material is difficult to learn and any purpose served by the process is completely apart from

the learning itself. Meaning is developed largely upon the basis of previous experience, either in or out of the classroom. The teacher must understand the backgrounds that are common to the class, and must illustrate possible application of the material to be learned in terms of possible child experiences. Previews of units of study aim at the clarification of meaning in relation to the entire school program.

(4) Reward, whether of a material nature or in the form of praise, commendation and attention, constitutes one of the most effective incentives for the majority of pupils. Such measures of reward should be used when deserved and when evidence of genuine effort is available. Punishment has limited possibilities as an incentive. Repeated use soon decreases its effectiveness. Any type of punishment which the pupil genuinely feels to be inappropriate or unjustified can create a serious emotional barrier between teacher and pupil which remains long after the originating incident has been forgotten.

(6) Motivation, particularly with young chuldren, is closely allied with personal relationships. Teachers who are liked and respected find problems of motivation considerably lightened. Personality factors are difficult to evaluate and control, but their effect upon the school learning situation should not be minimized.

MATURATION AND PHYSICAL HANDICAPS

(1) **Maturation:**

Maturation may be defined as the normal growth and development of the individual. Enough has already been said in the previous section on child growth to indicate that "normal" development covers a generous range of variations among children in both the physical and the mental areas. Maturation obviously influences learning capacities and many instances of its effect upon learning situations are familiar. Common observation reveals that a certain degree of physical maturity is necessary before walking, skipping, speech, or writing can be successfully undertaken. Practice and drill taken previous to this "threshold age" appear to have little effect upon learnings. Corresponding maturation in mental areas seems to control such developments as rhythm, humor, time and color discriminations. Obvious waste of effort occurs when the child is thrust into a learning situation quite beyond his readiness level.

The problem of readiness for learning is a real one, as much so for high school students as for those in the primary grades, although the problem is frequently unrecognized at the higher level. In recent years greater attention has centered on reading readiness, arithmetic readiness, and similar considerations. Learning readiness actually implies two conditions. The first is a desire to learn, which is really motivation; the second is sufficient somatic growth and control to make the learning efficient. The practical significance of such considerations is twofold. The learning situations to which the child is exposed must be within range of his capacities, both physical and intellectual, and, secondly, the related teaching processes must incorporate whatever steps are necessary to stimulate a supporting interest. Obvious as such conditions may seem, they have, unfortunately been allowed to lapse in the routine of some classrooms. Precautionary and corrective attention is advisable in every phase of the school structure, in curriculum organization, in teacher training, in classroom practice, and in in-service teacher training programs.

(2) **Physical Handicaps:**

The presence of physical handicaps may be generally accepted as having a negative influence on learning situations. The importance of such disabilities is probably not nearly so important in the area of scholastic learning as in the areas of health development and in personality adjustment. The relationship is, however, of sufficient concern to be noted here.

Sensory defects among school children are much more common than is generally realized. Estimates vary, but conservative figures would indicate that ten to twenty per cent of our pupils suffer vision impairment, with a similar number having subnormal hearing. About three per cent of these deficiencies are serious detriments. All evidence indicates that the obviously handicapped child is retarded at least one year in grade placement and tends to have lower learning efficiency in most normal situations. The consistent lack of understanding of school materials which have been prepared for normal pupils undoubtedly results largely from the decrease in sensory perception. Very frequently handicapped children exert special efforts which in turn may make serious physical demands through increased nervous tension and longer working periods.

Organic handicaps, particularly such things as diseased tonsils, and adenoids, malnutrition and glandular defects, have a deleterious effect upon learning. Final identification and treatment must come, of course, from the

school medical personnel, but teachers can frequently be of use in the school-home contacts necessary to implement remedial measures.

Numerous studies have been made of the influence of such physical environmental factors as ventilation, temperature, humidity, and excess noise and distractions. Naturally, excesses in any of these conditions detract from the efficiency of the learning process. Fortunately, such items are generally within the immediate control of the teacher and their proper regulation will measurably improve classroom learning.

(3) **Fatigue:**

Work of any type is energy-consuming. The release of energy produces certain waste material within the body cells. An accumulation of these toxic substances in the cells results in various symptoms of fatigue. The effects of fatigue upon learning are probably significant, although difficult to measure accurately because of other variable factors. Evidence indicates that increasing fatigue decreases learning in both quantity and quality. Learning rates diminish, percentage of errors increase, and the power of concentration wanes.

The nature of the assigned task determines in large measure the fatigue encountered. Other factors are important including such items as poor lighting, physical discomfort, noise, distractions and interruptions. Nervous tension heightens the energy consumption, and consequently results in direct physical fatigue. Tasks requiring rigid concentration can be tiring even though the physical exertion is negligible. First experiences at new tasks are more wearying than later practice. Concentration spans normally increase with maturation and the problem of physical fatigue from school activities naturally decreases toward the high school level. Out-of-school activities, however, generally increase over the same period, so that the question of physical fitness and physical condition can never be overlooked.

TRANSFER OF TRAINING

Transfer of training refers to the spread effect whereby training in one situation or learning in one area affects one's ability in other situations or other fields. The value and desirability of such a positive transfer is obvious. It is, in fact, the prime assumption underlying nearly all educational experiences. The beginner learns to count blocks, not really in order to count blocks, but to count. He may learn from a primer, but the reading is applied to newspapers, menus and road-signs. The music in our schools should be a foundation work for cultural appreciation in a world of radio and movies. History supposedly carries beyond the past into a fuller understanding of current social problems. Our entire curriculum is built on the assumption of transfer. What is learned in our schools can seldom be applied without modification. School rooms differ essentially from living rooms and market squares. The patterns of our culture are too fluid to permit exact duplication, and the roles of the individual are too myriad to justify specialization of experience. The total effect of our educational program lies in the transfer of training between the classroom and the outside world. That such transfer is possible and practical is beyond dispute. The proof lies in all the advancement traceable to formal schooling and its institutions. What remains to be decided is where and how such transfer can be most effectively accomplished.

Educators in every age have recognized the problem of transferring formal training to the realities of life. The medieval university answered with the "seven liberal arts," Rousseau answered with "Emile," Spencer answered with "What Knowledge is Of Most Worth." Plato, Locke and Dewey, each in his own day, has sought a more functional approach to education. Today answers are still coming, and they range from the Hundred Great Books to the "child-centered school." It is sometimes surprising to find diametrically opposed applications drawn from identical conclusions.

Consider the position of these two authorities. One says "The fact of transfer is not debatable"; the other writes "The author's final judgment is that transfer is a real factor in education." But the first goes ahead to support a progressive curriculum. "Courses of study having the greatest transfer value—and, therefore, the greatest value—are those that have the greatest pertinence to the problems of daily life . . . (Transfer) gives us justification for making school lifelike. Lifelikeness insures transfer not only because of the similarity between life and school thus secured, but because this same lifelikeness in instruction . . . means greater understanding of instruction." (26, p. 584-5). The second uses the same conclusion to support a traditional program; "There is enough in transfer to justify those of the more conservative type in demanding a traditional rather than a progressive curriculum. Nowhere does any study show that selection of subject matter according to the whims and fancies of an immature human being results in a beneficial transfer and, therefore, results in education." (30, p. 1312).

(1) The Faculty Theory of Transfer:

The justification for much of the traditional school curriculum was found in faculty psychology. The mind was considered to be analogous to muscle in its mode of development. The more exercise and hard work it accomplished the more strength it attained and the more ready it became to handle difficult problems. Each component of mental development comprised a separate faculty, and each needed regular and prolonged practice to reach maximum power. The theory was not long fashionable, at least amongst writing authorities, but its practical application unfortunately

lingered on for many years. Latin was a major on every school program because of its supposed superiority at "training the memory." Geometry and heavy mathematics made one logical in thinking, dialetic and rhetoric made one fluent and accurate in expression. Once established these subjects took on the prestige of position and their displacement represented one of the great curricular struggles of the past.

(2) **Transfer by Identical Elements:**

The first modern psychologist to attempt a complete explanation of the transfer phenomenon was Thorndike. His theory has been supported and modified in various ways, and is today widely accepted under the term "identical elements" or "common components." Transfer occurs, according to Thorndike, only where identical elements are discerned in both the influencing and the influenced function. Since Thorndike's view of learning is essentially connectionism, the theory of identical elements promotes the basic assumption of neurological stimulus-response bonds very nicely. Later work by his collegues, particularly Woodworth, indicated that transfer occurred even though the common phases could hardly be considered "identical elements." To allow a wider interpretation the term "common components" was applied to the same theory. It acknowledged that areas of identity could include both substance (skills, content and knowledge) and procedure (exact measurement, patient research, scientific organization etc.) This wider interpretation has made it possible to harmonize Thorndike's conclusions more readily with those of Judd.

(3) **Transfer by Generalization:**

Judd's theory of generalization is that transfer is possible when training gives rise to generalizations or understandings of principles which can in turn be applied effectively to new situations. The classic experimental evidence was derived from the shooting of darts at underwater targets, submerged at varying levels. Boys who understood the principle of refraction of light adjusted their aim for varying levels much more accurately than did the boys who had equal practice, but had no understanding of the principle involved. This explanation of transfer is perhaps less restictive than is the concept of identical elements since experience generalized from several situations can be applied in unison with the new situation.

Some psychologists insist that the two theories are but different sides of the same coin, that essentially both are talking about the same process on different levels of maturity or comprehension. Generalization is surely a much more advanced mental process than the recognition of identical elements, but is it an essentially different process? When the identical elements concept is broadened to include common components of procedure such as accuracy of measurement or adherence to scientific data it appears that it is approaching the generalization process itself. In any case it can be said with surety that the two viewpoints are in no way contradictory nor in direct opposition. Teachers familiar with both can apply both usefully. Common denominators in situations can be identified and emphasized, and the process of logical generalization promoted to the full measure of pupil capacity, experience, and maturity.

(4) **Transfer in School Learning:**

As in other areas of this discussion, teachers again are most interested in the classroom applications of learning transfer. The following summary covers pertinent points:

(a) Negative transfer may occur when training or practice at one task interferes with performance of another task. While relatively rare, negative transfer may occur when neither of the tasks is well learned. When two tasks are to be learned the second should not be introduced until the first has been rather thoroughly mastered. For example, the teaching and practice of both long and short division at the same time may well result in hesitant performance, poor understanding of the processes, and unnecessary errors. If one is first mastered the other can then be introduced in such a manner as to gain positive significant transfer.

(b) Transfer from one side of the body to the other (sometimes called cross-education) is relatively high. This means that motor skills learned by the right hand or the right foot have a high transfer value when the same skill is undertaken by the left hand or left foot. Applications in vocational training, physical education and similar fields would be common.

(c) Transfer is directly related to the native intellectual capacities of the learner. The ability to meet new situations with appropriate response and adjustment implies a high degree of transfer. Experimental data support the conclusion that brighter students accomplish transfer more readily and more completely than do the less gifted members of the class.

(d) The degree of transfer depends in some measure on the type of teaching. When the relationship between the influencing and influenced tasks is clearly stated and is recognized by the learner transfer becomes most significant. In other words transfer is best effected when the transfer possibilities become one of the aims of the learning. It may of course be but an incidental aim but transfer will not likely occur without some direction. Whether they accept the concept of identical elements or of generalization, or both, teachers should assume that the identification of common areas and the processes of generalization must be relatively complete if transfer is to be appreciable.

BIBLIOGRAPHY

1. Newman, Freeman and Holzinger: *Twins, A Study of Heredity and Environment,* University of Chicago Press, 1937.
2. Barker, Kounin, and Wright: *Child Behavior and Development,* McGraw-Hill, 1943.
3. Pryor, Helen B: *As The Child Grows,* Silver Burdett, 1943.
4. Zachary and Lightly: *Emotion and Conduct in Adolescence,* Appleton-Century, 1940.
5. Fenton, N.: *Mental Hygiene in School Practice,* Stanford University Press, 1943.
6. Conrad, H. S.: *Child Development* in Encyclopedia of Educational Research, 1941.
7. Terman, Lewis M.: *Genetic Studies of Genius, Vol,* 1, Stanford University Press, 1925.
8. Boynton, Paul L.: *Intelligence and Intelligence Testing,* in Encyclopedia of Educational Research, 1941.
9. Crayton, S.C.: *Physical Handicapped Children* in Encyclopedia of Educational Research, 1941.
10. Griffin, Laycock and Line: *Mental Hygiene,* American Book Company, 1941.
11. Olson, Willard C.: *Personality* in Encyclopedia of Educational Research, 1941.
12. Lynd, Robert S.: *Knowledge for What?* Princeton University Press, 1939.
13. Pressey, S.L. and Robinson, F.P.: *Psychology and The New Education,* Revised edition, Harper Bros., 1943.
14. Educational Policies Commission: *Learning the Ways of Democracy,* National Education Association, 1940.
15. Smith, Cressman, and Speer. *Education and Society,* Dryden Press, 1942.
16. Educational Policies Commission: *Purposes of Education in American Democracy,* National Education Association, 1938.
17. Termin and Merrill: *Measuring Intelligence,* Houghton Mifflin, 1937.
18. Freeman, Frank N.: *Mental Tests,* Houghton Mifflin, 1939.
19. Canada Year Book, 1946, King's Printer, Ottawa, Ontario.
20. Canada Year Book, 1945, King's Printer, Ottawa, Ontario.
21. Mumford, Lewis: *Faith for Living,* Harcourt, Bruce and Company, 1940.
22. American Council on Education: *Teachers for our Times,* The Council, 1940.
23. Address by Pres. Isaiah Bowman, John Hopkins University, September 1946.
24. Prescott, D.A.: *Emotion and the Educative Process,* American Council on Education 1938.
25. Hanna, Lavonne: *The Development of Value Patterns,* Stanford Social Education Investigation, Bulletin No. 13 (mimeographed).

26. Stroud, James B.: *Psychology in Education,* Longmans Green and Company, 1946.

27. Kingsley, Howard L.: *The Nature and Conditions of Learning,* Prentice-Hall, 1946.

28. Forty-First Yearbook of the National Society for the Study of Education, Part II, *The Psychology of Learning,* University of Chicago Press, 1942.

29. Young, Poul Thomas: *"Motivation"* in the Encyclopedia of Educational Research.

30. Sandiford, Peter: *"Transfer of Training,"* in the Encyclopedia of Educational Research, 1941.

31. Griffiths, C.R.: *Psychology Applied to Teaching and Learning,* Farrar and Rinehart, 1930.

32. National Council for the Social Studies, Thirteenth Yearbook, Anderson, H.R., Editor. *Teaching Critical Thinking in The Social Studies,* 1942.

33. Wesley, E.B. and Adams, M.A.: *Teaching Social Studies in the Elementary Schools,* Heath, 1946.

34. Conklin, E.S. and Freeman Frank S.: *Introductory Psychology for Students of Education,* Holt, 1939.

35. Mumford, Lewis: *The Condition of Man,* Harcourt Brace and Company, 1944.

36. Hurlock, Elizabeth B.: *Child Development,* McGraw-Hill, 1942.

37. Wertheimer, Max.: *Productive Thinking,* Harper Bros., 1945.

38. Dewey, John: *Democracy and Education,* MacMillan Company, 1916.

39. Jersild, A.T.: *Child Psychology,* Prentice Hall, 1947.

40. Morgan, J.B.: *Child Psychology,* Farrar and Rinehart, 1942.

41. Barnes, Harry E.: *Society in Transition,* Prentice Hall, 1939.

42. Conant, J.B.: *Education In a Divided World,* Harvard University Press, 1948.

43. Canada Yearbook 1947, King's Printer, Ottawa, Canada.

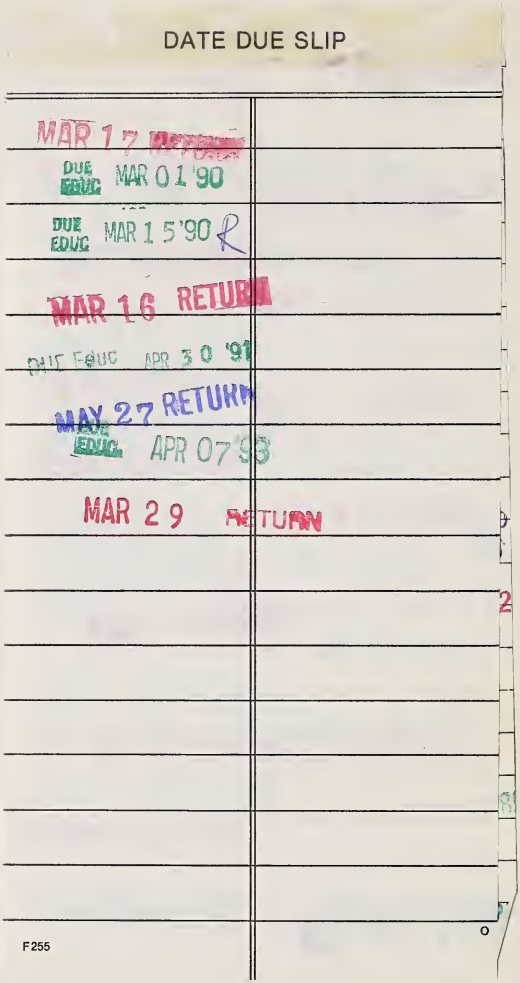
44. Annual Report of Department of Public Health, 1943, King's Printer, Edmonton, 1945.

45. Heck, A.O.: *The Education of Exceptional Children,* McGraw-Hill, 1940.

46. Shaffer, L.F.: *The Psychology of Adjustment,* Houghton Mifflin, 1936.

47. Maslow and Mittelman: *The Principles of Abnormal Psychology,* Harper Bros.

48. Carmichael, L.: *Manual of Child Psychology,* John Wiley and Sons, 1945.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Alberta. Dept. of Education
An Introduction To The Program of
Studies For The Elementary and
Secondary Schools.
CURRGHT